

The Commercial Car Journal

VOLUME XXIX

PHILADELPHIA, AUGUST 15, 1925

NUMBER 6

Making the Long Distance Bus Tour Popular

Extend Publicity Through Co-operation of Other Operators.

Do Not Rely Exclusively on Local Advertising.

Get Business From Touring Agencies

By H. LIONEL WILLIAMS

BEFORE motor bus lines can compete successfully with railroads or build up worth-while cross-country services, they will have to adopt larger-scale, business-getting methods, similar to those used by the railway companies. Not being content with their own isolated efforts, confined to their own towns, they will have to go farther afield and secure wider publicity by the co-operation of other operators.

THIS is the considered opinion of W. H. "Billy" Spears, general western passenger agent for the Royal Blue Line Motor Tours. As an ex-railroad man, Spears has adopted railroad methods of getting business with considerable success. He does not rely on local advertising or confine his efforts to a small radius. His business is sent him by 700 tourist agencies scattered throughout the country, by ticket agencies, bankers and information bureaus. In the Royal Blue Line system there are nine associated companies operating about 75 vehicles. These are located in various large towns all over the country and each one advertises the others. An inquirer in Chicago can get full details of the service between Buffalo and Boston, and vice versa.

Get Your Tickets at—

ALL the sources of ticket sales are regularly circularized, and various periodicals are used for advertising to the public. In establishing a new line, Spears finds it is necessary to spend for the first year 20 per cent. of the estimated income on advertising, dropping to 15 per cent the second year and to only 4 per cent for the third year when the business should be properly organized and showing a profit. In the case of city sight-seeing tours, the expenditure on advertising and commissions usually averages 20 per cent the first year, cutting down to less than one per cent the second year. When this service is properly organized the commission sales form only 5 per

cent of the total. Much useful publicity is secured by lending cars to various societies for charitable and other work.

Commission sales are an important feature, for although the agent often only makes a sale to one inquirer in twenty, he is doing good publicity work among the other nineteen. In new districts these agents can sometimes be interested in a coupon system which allows them to give

a customer a coupon representing a cash discount from the published fares. For instance, where the agent's commission would in the ordinary way amount to two dollars, the coupon has a face value to the customer of one dollar, and the agent gets the other dollar so that the revenue to the bus line is the same.

That really long-distance motor bus travel will become popular, Spears has every confidence, but bus transportation lines will have to have a through ticketing system by which passengers may transfer from line to line or a mileage book system acceptable on all bus lines before they can expect to do any long distance through hauling. After these co-operative features are inaugurated by bus lines he expects to see long distance bus transportation come into its own.

Good Return at \$6

IN the fall of last year he took two Fageol coaches from Chicago to California, with 12 passengers and some Blue Line officials. The journey occupied twelve days, owing to bad roads, but the complete cost of the trip was but little more than what the individual would have paid for railroad ticket, Pullman berth and meals. In addition the passengers had the opportunity of viewing at close quarters the towns of Denver, Santa Fe, the Painted Desert, Petrified Forest, etc. Why this bus trip was cheaper is shown by the figures: Bus transportation charge was \$6 per day or \$72 for the trip. The railroad fare is \$80 plus \$25 Pullman and say \$11.25 for nine meals. Meals and accommodation for the twelve days on the bus cost \$60, or a total of \$132 as against the \$116.25 of the railroad trip. The extra nine days sight-seeing, in other words, cost only \$16. With improved road sur-

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W. H. "Billy" Spears

The man who is making long bus tours popular

Releasing Congestion's Strangle Hold

*The Best Brains of the Time Need . . . Solution;
Wide, Level and Smooth Streets Imperative,
Square Cornered Intersections Must be Eliminated*

Washington D. C., is a Notable Example of a Well Designed City

Rapid Transit May be Solution for Congestion

By MICHAEL J. PHILLIPS

IF property values are to be maintained and business is to continue to flourish in large cities, means must be found to break the stranglehold of congestion which is closing on metropolitan streets.

To relieve them, haphazard, half-baked plans, makeshift measures and political expedients will not do. The relieving of congestion is an engineering problem worthy of the best brains of the time.

One device or system will not be sufficient; every tried method of relief, in old and new combinations, must be put into operation, or the choicest locations in the retail shopping districts of the cities, where property values are the highest, may become tenantless because merchants will be faced with the sheer inability of their customers to reach them in profitable volume.

These conclusions are reached after hearing an exposition of city traffic difficulties from Doctor Miller McClintock, consultant to the Los Angeles Traffic Commission and formerly of the Bureau of Municipal Research at Harvard University. A picture in some respects equally as gloomy was painted by Phil Harris, chief engineer of the Los Angeles Railway.

The two experts do not agree in one particular. Dr. McClintock says: "Street cars and automobiles never did get along together. They get in each other's way and a mutual slowing up follows." He intimates that the place for the street cars in congested areas is underground or elevated.

Trolley Removal No Solution

Mr. Harris, on the contrary, says: "Taking the street cars off the surface of our streets wouldn't help. Immediately, for each car removed, three men who have not been bringing their automobiles downtown would start to ride to business, and the three automobiles will fill entirely the vacated space."

"There are a number of causes," says Dr. McClintock, "which have brought about the traffic congestion of today, some of them rather far removed from the actual congestion which we see on the streets.

"Development of reinforced concrete has had a very important effect. It has made it possible to grow upward instead of outward and has placed a burden on the streets for which they were never

designed. The streets of Los Angeles were designed for the traffic of a pueblo not over four stories in height. Today we have a twelve-story city.

"One building now being constructed will draw through its doors each day approximately 100,000 persons. Five hundred thousand persons, half the estimated population of the city, pass through the intersection at Seventh and Broadway every day. The skyscraper has created a very strong gravitational pull in the center of our community. Our streets are overburdened until the congestion created offers a serious threat to established property values. The whole mode of urban mobility has radically changed."

Efficient Speed 20 Miles

DR. MCCLINTOCK pointed out that capacity for high speed is not an unmixed advantage. "Tests show that the maximum efficient speed for automobiles moving over a highway is approximately 20 miles per hour. At higher speed a greater headway is required, a headway which increases somewhat as the cube of speed, so that at 40 miles per hour fewer cars can pass over a roadway in a given time than at 20 miles.

"The gain of the truck is almost entirely clear. Its only competitor, the horse-drawn dray, moves one ton at five miles an hour, while the truck moves five tons at fifteen miles an hour."

Dr. McClintock recited how parents and teachers began an agitation over the number of children who were maimed or killed on their way to and from school. As a result of this agitation, natural and praiseworthy, the council of Los Angeles passed an ordinance which forced all motor cars to stop before crossing the white lines which marked safety zones to and from the schools.

This, for a period of eight months, caused annoyance and confusion, brought about a million and a half extra automobile stops a day and did not lessen the number of accidents, rather, increased it. The ordinance, an example of political effort rather than an engineering one to solve traffic problems, was repealed.

Dr. McClintock says that there are two methods of dealing with traffic problems—legal and physical. "Under legal reliefs the most important step the average city can take is to adopt a modern code for traffic regulation. It should be simple but designed for the motor and not for horsedrawn age. It must be suited to the local needs and peculiarities of each community. The drafting of the system should be entrusted to an experienced traffic engineer.

"The benefits which come from a properly designed traffic code are illustrated in Los Angeles, where the adoption of the new traffic code and its intelligent enforcement by the police department has resulted in cutting fatalities in half and increasing traffic flow through the streets of the Central Traffic District (the most congested area), by more than fifty per cent.

"Rigid building limits constitute another legal relief, Los Angeles and almost every other city mistakenly believes that its prosperity is to be judged by the height of its buildings. There is no reason why profit should not be found in the disastrous experience of some Eastern cities. It would be a great disaster if the present building heights are ever removed, for when all the buildings, or a great majority of them, are built up even to the present limit (twelve stories), we will have a congestion beyond our comprehension."

Fallacy of Skyscrapers

THE idea that skyscrapers mean prosperity, Dr. McClintock pointed out, came from the necessities of New York. Because the lower part of the city is built on a narrow peninsula, the architects were forced to build up instead of out. In practically every other city there is room to grow out instead of up, but not in New York. And other cities, feeling that skyscrapers made New York great, unthinkingly followed the example.

In discussing the physical means of relief from traffic congestion, Dr. McClintock said: "A dual relief is to be found in the development of rapid transit. Subways and elevateds relieve streets of their rail surface traffic. The other relief is that when rapid transit is provided in the city persons who now come down to the central part of the city in private motor cars will use mass carriers. New York below Fourteenth street has very few private automobiles.

"There must be improvement in the design and construction of streets; and plans for a more systematic and adequate street layout.

"We continue to put down the same kind of streets that we did fifty years ago, under the assumption that no change has occurred. We are still building for horse-drawn wheeled traffic. Streets should be designed according to certain units of traffic lane widths. Heretofore streets have been planned without reference to the number of lanes they would carry.

"This has resulted in inefficiency, for often a street would carry as much traffic though several feet narrower, and another entire lane of traffic is only a few feet wider." Dr. McClintock believes the ten-foot traffic lane, providing a three-foot leeway for passing vehicles, is the feasible one. Hence streets should be built in multiples of ten feet.

Eliminate Right Angle Turns

"The open drains for clearing the streets of excess moisture is a hindrance to the smooth and easy flow of traffic streams. Bumps and hillocks in the street slow up traffic and cause delay and confusion." So do square corners, Dr. McClintock points out. Right-angle turns were designed for horse-drawn vehicles with a short turning radius. The automobile, traveling at greater speed, requires a greater turning radius. It cannot make an abrupt turn.

"Yet," comments the expert, "we continue to lay down beautiful boulevards and streets for heavy traffic with right-angle curbs at intersections. These must be cut back.

"The high crown on roadways is a feature which is slowly disappearing. It is very hampering to motor vehicle traffic. This is particularly true in the operation of motor trucks. No truck driver who has any respect for himself will ever drive on the side of a roadway when it is sloping. Therefore he drives down the middle of the road, no matter how wide it may be." And, it is pointed out, great danger results.

An Ideal Pavement

THE ideal pavement, as Dr. McClintock apparently sees it, is a wide, smooth stretch that flows in a level, unbroken line from curb to curb, without hollows, bumps or crown, which is built in multiples of ten feet, which has wide curves at intersections, which has the proper texture to prevent skidding in any weather.

"Now I come," continued the speaker, "to the relief which can be secured by a re-design of our street plan. Los Angeles and other cities have grown in a haphazard manner. A view of our street map shows that Los Angeles is not one city, it is made up of a hundred little cities, each of these laid out as an independent community by itself. For instance it is impossible to go from Hollywood to the southern part of the city except on two streets which happily were laid out as section lines in the early days."

Dr. McClintock pointed out that traffic delay and congestion is caused by "blind" streets which end in arroyos or in someone's front yard. To facilitate smooth traffic movement, all plug streets should

be cut through and connected up, so the motorist can keep on going toward his destination, blind streets should be carried across arroyos by bridges, and where the terrain makes it possible, as it does in Los Angeles, a sunken truck highway should be constructed. Such a highway is planned through the city beside the Los Angeles River.

More Street Area Needed

"A connection of only two blocks," he said, "will often turn two useless fragments of a street into an important highway. There is a necessity also for cutting new streets, for Los Angeles, as well as many other cities, has been very chary of space given to its public highways. Only about 20 per cent of its downtown area is in streets, while in Washington, D. C., a most notable example of a well-designed city, 44 to 50 per cent of its areas is devoted to traffic ways."

Dr. McClintock related how the Traffic Commission recently employed Frederick Law Olmstead, Harland Bartholomew and Charles Cheney to make a Major Traffic Street Plan for Los Angeles. This plan contains much of interest to other congested cities.

For instance, a traffic quadrangle is evolved. Los Angeles and many other cities in their formative days were chiefly interested in getting downtown from the

The traffic quadrangle will consist of four wide, smooth streets well outside the congested area, forming a square about it. Motorists who desire to get across the city, not into the business district, will drive until they strike the quadrangle and then change their courses into the new direction. This should reduce city congestion by fifty per cent, some experts estimate.

cardinal points of the environs. These main roads, sometimes as few as two or three, were developed, the others were neglected. As a result, it is still easier to get into town than to get through it or around it.

So through traffic follows the line of least resistance into the congested downtown area and makes confusion worse confounded.

"The major Traffic Street Plan," concluded Dr. McClintock, "has been adopted by the city of Los Angeles. The people last November voted \$5,000,000 to begin the work. That amount, it is estimated, will make possible the construction of approximately thirty-five million dollars' worth of new streets. Local districts will bear a special assessment burden, equivalent to the increase in the value of their property.

"The entire plan, when consummated, will cost approximately three hundred million dollars. This is not a sum to be expended in any one year but the plan offers a practical idea for the future and a promise for traffic freedom twenty-five years hence when the city of Los Angeles has acquired a population of five million."

Phil Harris, chief engineer of the Los Angeles Railway, answered promptly

when he was asked if motor buses in place of street cars will contribute to the lessening of city congestion:

"The answer is no. There will always be congestion in a big city. Relief can only come through widening and straightening streets and cutting out parking. If we took off street cars, more people would drive down town and fill the empty space.

"The Los Angeles Railway put in buses as feeder lines. Buses can be installed on a smaller investment, but all such lines are operated at a loss. When in the past we were asked to extend to a new district help open it up, the street cars got all the business. Now we are not sure. Motor cars and other people's buses get a share of it.

What Higher Fare Does

THE extra nickel in fare means a lot to more people than was at first believed. In Los Angeles the carfare was a nickel and the bus fares ten cents. The result was the buses went along practically empty while the cars were loaded as badly as ever.

"We have been watching the buses a great deal. Those going out into the state are hurting the interurban railway systems. But the electrics will get it back if grade crossings are eliminated and speed and service are given.

"The bus has an advantage in the city on account of its flexibility. It is easy to go around, one disabled bus doesn't tie up the whole system the way one dead street car does. The buses can change to another street on a moment's notice. "But the street car can carry heavy overloads. A car seating 48 or 56 will haul 100 persons, a two-car train will accommodate 200. The bus will take 24 or 48, according to whether it is a single or double-decker, but that about all. An overload is not permitted. Another advantage the street car has, is that it is not as easily damaged in a collision, so the repair bill is less.

Street Cars and Congestion

"More street cars will not relieve congestion. At the request of the city authorities we put on more cars during the Christmas season last year. The result was they got in each other's way, tied the system into hard knots, and so delayed people that they didn't get home until an hour after the usual time.

"Bus lines have a future as street car line feeders. They should be run by the same company that operates the street car lines, because the two can be more economically operated as one system than as separate organizations, each of which must earn a profit. We are buying more buses earn a profit.

"Rapid transit is a solution for congestion. We will have to come to subways in Los Angeles, but the building of them, after the public has been educated to see their necessity, will take a long time.

"We really don't know how far we are going in the bus game. We are studying it. I might say we will go as far as necessary to give the people of Los Angeles adequate transportation. I believe the city can be proud of our buses. We are one of the first to install doubledecker buses with airbrakes and six-cylinder engines."

Branch or Dealer—Who Cares—If?

By LAWRENCE L. WHALEY

Field Manager, The Gottfredson Corporation, Detroit

SOME day some dealer or branch manager in this business of selling motor trucks will establish a precedent, prove himself an exception and worthy of the title of "business man" by setting up a rule: "A profit of no less than one-fifth of the selling price on every deal," and then living up to his rule.

A short time ago there appeared in one of the leading trade journals an article which presumed to deal with the matter of motor truck distribution and very openly favored the dealer method as opposed to the more recent efforts of some manufacturers to sell their lines direct to the user by means of a branch organization.

Those manufacturers and dealers who still follow the earlier methods would undoubtedly agree with this view of the matter and being further convinced of the strength of their policies by reading it are no doubt including certain phrases which appeared in that article in their selling talks.

Those who are following the branch idea probably remarked that the article must have been paid for by the opponents of the branch method and either forgot it or decided to make an effort to show each buyer the reasons why their method is the only correct way to serve the public. And so the never-ending battle continues and sufficient evidence to condemn either the one or the other method is not forthcoming.

As a matter of fact, is it important whether a truck is sold by Henry Smith, a dealer, or by John Brown, the manager of a factory branch; if the truck is what it is represented to be and the buyer is accorded square treatment and reasonable service during the life of the truck? The buyers are answering that question every day and the answer is—No!

The problem of interesting reliable business men

in investing money and effort in a motor truck franchise is more and more difficult every year. The many problems that arise to greet him at every corner are enough to stamp it as a gambler's business with the odds all in favor of a failure unless the danger signals are posted and observed.

There is no other business where the lack of organization and method is so apparent. The passenger car business has its dealer associations, its blue books for determining the value of the used cars and many other helps for the rougher places. But at the present time the game of truck distribution is played without a rule book of any kind. It resembles no other enterprise so much as one of those old fashioned free-for-all prize fights where a dozen or more fighters are placed in a ring and told to go to it, the last man left standing being pronounced the winner.

This situation may continue for some time, but eventually something will be done about it.

So much has been said about used trucks and so little done about it that it seems useless to mention it here. So long as appraisals are made in accordance with discounts instead of resale values both by dealers and factory branches, we'll have to take our medicine and time only will determine whether either can afford

the sacrifice of two-thirds the allowance made on each trade-in, when it is resold.

Eventually that one rule that a profit (real not imaginary) of not less than one-fifth the selling price of the new truck must be made on every deal, trade-in or no trade-in, will be established. When that rule is observed the selling methods and service given by the dealer or branch and the demand created by the advertising of both manufacturer and seller will de-

I Believe there is a future in the motor truck business.

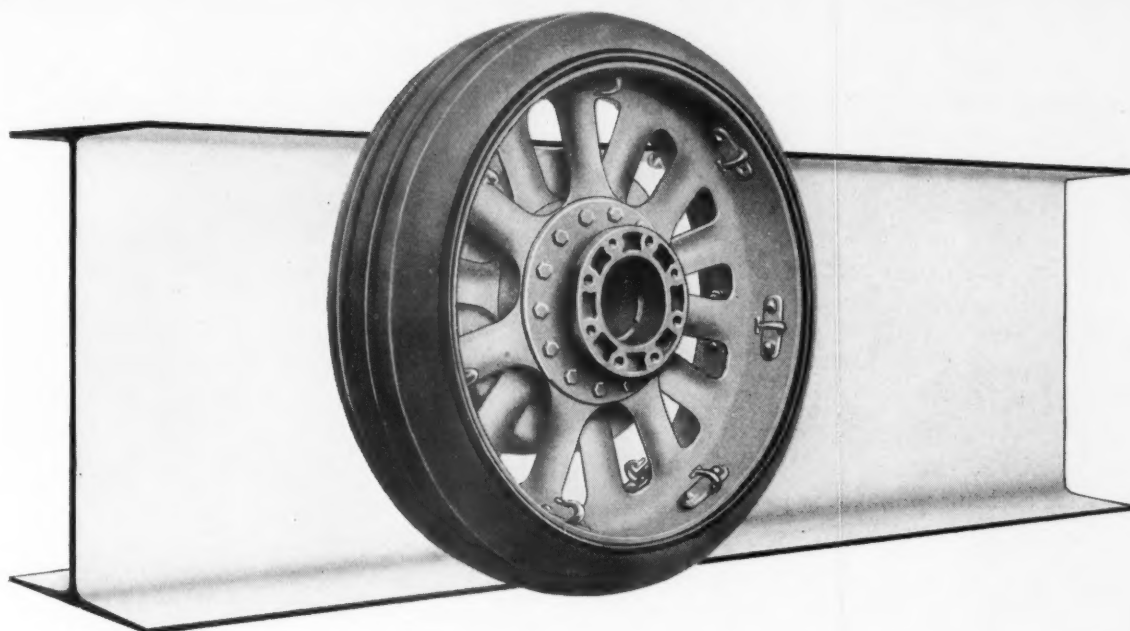
I Think it doesn't matter who sells the truck—Branch or Dealer—as long as the buyer gets a good truck and reasonable service.

I Don't believe in inflated prices on new trucks nor out of reason allowances on used trucks. Someone is bound to get stung, either the dealer, the new truck buyer or the man who buys the trade-in.

I Want to be honest and upright and respected by dealers and buyers alike.

I Want to make a profit on each and every deal so that I can stay in business for a long time, meet my pay roll every Saturday night and keep my employees satisfied and loyal.

I Want to live in a good house on a decent street among sensible people and drive a good car—but first I want to earn the right to these things by the service I render the public.



Truck Wheels Fashioned From I-Beams!



A truck wheel cold-formed from a Rolled Steel I-Beam seems to be revolutionary, but it simply utilizes to advantage a durable and resilient material.

The I-Beam Wheel combines resiliency and durability with the advantages of one-piece construction.

The character of the material used and the method of its construction permit the I-Beam wheel, when necessary, to be reconditioned and put back into service.

Specify BETHLEHEM Rolled Steel Truck Wheels and eliminate the cost of spare wheels.

—the Wheel's at the Bottom of it!

WE manufacture and carry in stock Bethlehem Rolled Steel Truck Wheels for 2, 2½, 3½, 5 and 7 ton trucks, made for Timken axles and using solid tires. These have the hubs of front and rear wheels equipped with Timken bearing cups. Rear wheels are assembled with Timken brake drums, and front wheels are furnished with hub caps. Wheels are shipped ready to receive tires and be installed on the truck.

Any other hub cores and brake drums can be made to truck makers' specification and assembled with the wheel when desired.

BETHLEHEM STEEL COMPANY, General Offices: BETHLEHEM, PA.

District Offices in the Following Cities:

New York
Cincinnati

Boston

Philadelphia
Cleveland

Baltimore
Detroit

Washington
Chicago

Atlanta
St. Louis

Buffalo
San Francisco

Pittsburgh

BETHLEHEM

termine the volume of their sales and not used truck allowances.

A trade book compiled by some live publishing company with the assistance of the leading truck manufacturers showing approximate values of used trucks in different cities will be of assistance in bringing about a happier state of affairs than now exists.

Ten years from now we will undoubtedly employ both the branch and the dealer method of getting our product to the truck user just as we do today. The question is not so much, which is the better way of selling as it is a problem of educating both dealer and branch manager along the line of sensible business methods.

Trucks are sold by salesmen, who in spite of the opinions of buyers and sales-managers to the contrary,

are human beings, and who in the main have to be convinced that not only is their truck among the best in the market but that the branch or dealer whom they represent is willing to give a dollar's worth of value in merchandise or service for each dollar turned in by them.

To those firms who find the factory branch plan better adapted to their needs—all the luck in the world.

To those firms having good old-fashioned, staunch dealer organizations—the same.

Those having both dealer and branches are in the best position to make comparisons and their viewpoint would be interesting but—dealer or branch—let's get together and pull for more real business-like policies in a business second to none from the standpoint of the real service it renders the whole public.

Can the Trade-in Practice be Abolished?

This Concern Has Found It Possible in the Passenger Car End and It Plans to Duplicate Its Effort With Trades



U. V. Burke
Sales Service Manager
Mason Towle Co., Cincinnati,
Ohio

AFTER two years' endeavor to abolish their used vehicle department, The Mason Towle Co., of Cincinnati, have reached a point where the last 120 sales were made with but two used vehicles taken in trade.

These figures refer to passenger cars for whatever purpose they are used, but the results so clearly indicate the possibilities of the method adopted of cutting down the trades that J. V. Burke, the sales promotion manager, has extended the practice to the truck department. In a few months' time the truck trades have been cut down to 40 per cent of the total sales instead of the usual 90 per cent and every deal of this 40 per cent has shown a profit.

That the elimination of trades is not causing any great loss of business is shown by the fact that during the past six months, when the trade-ins have been cut down by 22 per cent, the total sales have increased no less than 35 per cent over the same period last year.

The method of dealing with trades is as follows: In the first place all vehicles over four years are valued by a junk dealer, whose offer makes the trade allowance. Newer trucks than that are appraised according to the market value and

20 per cent is deducted for handling charges, plus the estimated cost of making any repairs necessary for resale. The market value is gauged by reviewing and analyzing every ten days the average price for which the trucks were sold during the previous month. These average prices are listed according to the year and model.

With each of the used vehicles sold, the buyer gets a chart showing the repair work done, and this not only gives him some idea of the condition of the vehicle, but provides something definite for the salesman to talk about.

Putting It Up to the Prospect

The whole method will therefore be seen to consist of fixing a trade-in allowance at such a low figure that usually the prospect will sell his vehicle elsewhere or at the worst take an allowance which ensures a profit to the company. It has been a noticeable fact that the salesmen of The Mason Towle Co. have come to look upon the trade-in as something undesirable and to be discouraged. This is commendable, for it is often the salesman who presses for a favorable trade allowance in order to secure the business. This new attitude appears to impress it-

self on the prospects with the result that they do not press the matter as they otherwise would.

In the case of larger buyers it is now the practice of the salesmen to first interview the garage superintendent and ask him if he cannot dispose of the vehicles privately. Often it is possible for them to do this at much better prices than they would get on a trade. A recent example of this was in the case of a Cincinnati store who were in the market for 5 trucks. At the suggestion of The Mason Towle Company's salesman they offered their used vehicles privately and were successful in disposing of four of them. The fifth was taken in trade at a figure advantageous to the dealers.

So it will be seen that it is possible to confine one's activities to the sale of new vehicles if the matter is handled carefully. In the instance cited the practical abolition of the used vehicle department has taken nearly two years, but the benefits are immediate for the first step is to make certain that there will be no loss on the sale of the used vehicle. The abolition of the used vehicle department, of course, eliminates certain overheads, and frees the salesmen to concentrate on their primary function of selling new vehicles.

What Flat Rate Has Done for One Dealer

**Reduced Cost to Customers 47 Per Cent
Gave Mechanics Higher Hour Rate
Shunted Responsibility Onto Mechanics
Made Possible Quicker and Better Work
Allowed Vacations With Pay**

PERHAPS the biggest drawback to the general adoption of the flat rate system in connection with trucks is the variety of types and sizes in any one make and the frequent variations in design, but this difficulty is not insurmountable. Given a reasonable number of jobs of the same kind, the benefits of flat rate and profit-sharing piece work are so great that the adoption of the principle is worth considerable effort.

Undoubtedly, the most favorable condition for flat-rate operation lies with dealers and others who handle both passenger cars and commercial cars of approximately the same chassis design. The repair schedule in such cases is very simple, once it is worked out.

Such is the experience of the Mason Towle Company, of Cincinnati, dealers in Dodge Brothers and Graham commercial cars. Starting in 1920, J. P. Egan, the service superintendent, kept a cost chart on all repair jobs, divided into labor, material and overheads. Time studies were made continuously, and the cost of each job was determined by the average of ten jobs. Since then the figures have been constantly revised and kept up to date.

As time went on new equipment was added and new tools devised to speed up the work. Better lighting was secured in the shops and it was soon found possible to reduce the cost to the customers by 12 per cent. Compared with 1920 prices, the cost to the customer is now 47 per cent less although the mechanics are actually averaging a much higher hour rate.

Time Cost Basis a Loss

WHEN repairs were sold on a time cost basis, the shop lost money every month because many of the more complicated jobs had to be done at or less than cost in order to satisfy customers. Under the newer system the cost of the job is fixed, and the mechanic gets a set amount for the work irrespective of the time it takes him. As a result the work is done better and quicker, better because the mechanic is responsible for the job being done right and has to do it again in his own time if it proves defective within ten days. Any

mechanic refusing to rectify a "comeback," automatically discharges himself, and this is a very rare event.

Not only the mechanics, but the service manager has a squarer deal under the flat-rate method. Bad work and slacking in the shop are usually credited to the service manager, as are the customers complaints which inevitably follow. Any manager who is not popular with the men is thus likely to be "framed" into having to resign, but under the fixed price system the men are more or less their own masters and their relationship with the department head is in every way more pleasant.

The shop superintendent, too, is less occupied in seeing that the men do their work, and is thus freed for attention to customers, and is able to take care of a larger force of mechanics.

Average 40 Jobs a Day

IN the Mason Towle shops there are 9 mechanics during the winter period of December to February, and 14 for the rest of the year. This force deals with an average of 40 jobs a day during the 300 working days of the year. These 12,000 jobs cost a little more than \$72,000 for labor and overheads, or an average of \$6 a job all round, but the actual average labor-overhead cost on the truck jobs is in the neighborhood of \$20. As the trucks make up 20 per cent of the number of jobs handled, the revenue from them is no less than two-thirds of the whole labor sales each year.

The reason for the higher average cost of the commercial car jobs is that the owners of the trucks usually carry out their own small repairs leaving the larger jobs for the service station. It is obvious, therefore, that car for car the commercial business is of far greater value to the service department than the passenger car repairs.

Fluctuating labor demands have to be carefully regulated, whatever repair system is used. In this case there is a period of three months when the normal force is too large and some of the men have to be laid off. There are several ways of meet-



J. P. Egan

Service Superintendent Mason Towle Co.
Cincinnati, Ohio

ing this situation, such as campaigning for extra work at the slack time by offering reduced charges, etc. In Cincinnati there is an auto trades school from whom mechanics can be had for any period, and these can be confined to the simpler jobs.

Idle Rate 56 Cents an Hour

EVERY mechanic is paid at the rate of 56 cents an hour for all idle time incurred during the day, and this tends to keep them satisfied even during the slacker period.

After twelve months' service each mechanic is given two weeks' vacation with pay at the idle time rate based on a week of 49 hours. After six months' service they are only entitled to one week off at the same rate. No extra overtime at all is paid, but the men are given a supper allowance when the need arises.

In the Mason Towle shops there is now \$11,000 worth of equipment including several special time-saving devices. The main items comprise:

- 1 Lathe
- 2 Brake lining machines
- 1 Reboring tool outfit
- 1 Cam shaft and main bearing fixture
- 2 1/2" electric drills
- 1 5/16" electric drill
- 2 Valve grinders
- 1 Valve refacing grinder
- 1 Generator test bench
- 1 30-ton Arbor press
- 1 Grease gun for transmission and differential
- 1 Alemite portable high pressure lubricator
- 1 24" x 30" Face plate
- 1 Set V blocks and indicator
- 1 Cylinder wall indicator
- 1 Portable crane
- 1 Portable forge
- 1 Combination connecting-rod and piston pin aligning fixture
- 2 Hoists on tracks
- 1 Set wrist pin broaches in standard .003 and .006 oversize
- 1 Set inside micrometers
- 1 1", 1" to 2" and 3" to 4" micrometers.

This equipment is taken care of by a qualified toolmaker, and the mechanics are not permitted to use any but such items of equipment as brake reliners, and the portable hand reboring or honing ma-

chines. All machine tool work proper is done by this one specialist. This man alone has developed various kinds of pullers, broaching set ups and other devices which have cut down the time required on some jobs as much as 50 per cent.

Another feature of the Mason Towle service is the inclusion of unrecorded extras in many of the jobs. For instance, after a front axle and steering connection have been rebushed and adjusted the axle and all front wheel bearings are properly lubricated. In the case of a valve and carbon job, all valve seats and faces are refaced, the magneto contact breaker cleaned, and all valve guides inspected and tappets adjusted. These details do not appear on the bill, but they are, of course, included. As a result there is rarely any necessity for the customer to bring the truck in again shortly afterwards for anything he might consider in any way connected with the work he had paid to be done.

Summarized then, the results obtained by the Mason Towle Co., from the introduction of the flat-rate repair method are: (a) 47 per cent reduction in cost to the customer, (b) better grade of workmanship, (c) contented mechanical staff, (d)

assured profits to the management, (e) reduced overheads due to greater efficiency of individual mechanics. As the truck and car owners can at any time inspect the work in progress there is added satisfaction for them in knowing exactly what they are paying for as well as knowing how much it will cost.

To give some idea of the actual charges for work on trucks in the Mason Towle shop the following figures are given. Incidentally they have been adopted by 20 sub-dealers, with slight modification in the proportion of overheads.

ENGINE	
Grind valves, clean carbon	\$7.00
Wash and clean	2.35
Clean carbon	2.35
Repack water pump	1.55
Fit new rings	11.75
Overhaul water pump	7.75
Repack exhaust nut	2.35
Install manifold gaskets	1.55
Overhaul vacuum tank	2.35
Line up connecting rods	2.35
TRANSMISSION	
Overhaul	\$13.95
Overhaul transmission bead	5.45
Universal joint	6.20
Install high speed sliding gear	7.75
BRAKES	
Reline both brakes	\$10.85
Adjust foot brake	1.50
Reline foot brakes only	7.75
Adjust both brakes	2.35
Reline emergency brakes only	6.20

Is Service the Key to More Profits?

WHEN the investment in the parts and service department of a dealer organization is, as is often the case, equivalent to the invested capital value of the sales department, there is every reason why the utmost return should be extracted from one as from the other. Due to the parts situation however there is often difficulty in getting the user to avail himself of the service facilities, while those who otherwise would do so are in many instances located too far from the dealer establishment to find any inducement to go there for repairs.

The trouble in the majority of cases is that a larger service establishment has to be maintained than the actual amount of business warrants. The problem therefore lies in discovering ways and means of inducing users to avail themselves of the facilities offered and so putting the service department on a paying basis. First however it is necessary to establish the fact that the department can do a better or at least as good a job as the independent repairers, added to which there must be some price inducement or some other extra service to make the additional expenditure of money or effort on the part of the user worth while.

Service is Worth Attention

What most dealers do not appear to appreciate is the fact that the service end of the business is worth a little attention even if only as a business getter for the sales department. Very often a fraction of the money spent in advertising the trucks

for sale would bring better returns if devoted to creating business for the maintenance shops which can often sell the organization to a customer more effectively than can a truck salesman. Get the customer in your service department and, if things are as they should be, you won't be able to keep him off the sales floor.

There are many ways in which the customer can be interested in the service offered by the dealer maintenance establishment. The first essential in all of them is to establish direct contact and to maintain it. Every dealer should have a complete index of his users from which he can discover whether they are making use of the service facilities or not. This file

should be gone through frequently. If a concern buys a truck and nothing is heard from them for some months it is as well to investigate. When the time has elapsed that it is reasonable to expect the vehicle to require some attention, even if only a carbon job, the opportunity should be taken to get in touch with that customer and indicate the facilities that are at his disposal. At the worst he will see that the

dealer is still interested in his welfare, fare, and he will appreciate the attention even though he does not take advantage of it.

A number of communications of this nature should elicit response of some kind. If not it may be as well to make a personal call. In this way little grievances are sometimes uncovered that can be disposed of with benefit all round.

Creating Goodwill and Sales

Then there are a number of inducements which may be developed as experience dictates. One is to establish a system of regular inspection, free or otherwise, of the customer's fleet. A detailed report and quotation for necessary work without the customer being bound to bring the work to the dealer station, will at least create goodwill, but more often than not the work is secured.

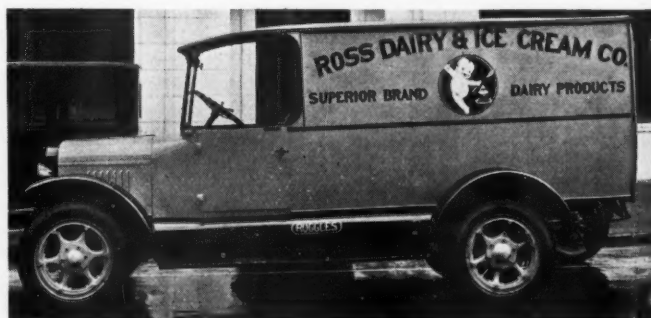
In connection with this, the practice of always giving definite quotations for work to be done begets confidence. Full details however should be given and no other work done without a special order, for extras on a bill have a habit of looming large in the eye of the man who has to sign the check.

Other little services can be arranged, such as greasing, oiling and cleaning at fixed prices, while it is a good bit of psychology to let the customer know that he is always welcome to walk through the shops and see the work being done.

Flat Rates Revive Business

Finally there is the never-failing appeal of low priced repairs. This desirable feature can be secured by instituting a practical flat-rate system whereby the mechanics are rewarded according to the amount of work they do and by an intensification of methods earn a higher hour rate with less cost to the customer. An increasing number of shops are adopting flat-rate, and finding in it a means of reviving the business they lost when the bottom fell out of the parts business.

All these things add their quota to the appeal of the dealer service department to the purchaser of his trucks, but the underlying thought must ever be an educational effort to make the customer look for high-grade workmanship in the repair as in the new vehicle.



A Better Grade of Panel Body Recently Announced by the Highland Body Mfg. Co., Cincinnati, Ohio

They are offered in three one-ton sizes. The design has been worked out so as to permit quality production. The frame work is of oak securely ironed and bolted. The panels are of wood, covered with stretcher leveled steel, with felt between. Advantages of a wood panel body with the durability of steel is said to be obtained with this construction. The hinged fore doors are attached with curtains that open with the door. Full vestibule front may also be had with drop sash doors.

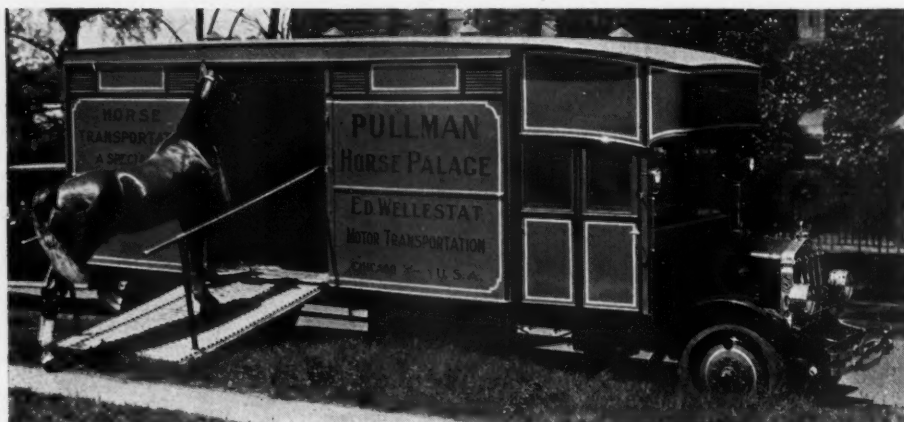


A "Surefooted" Car

MUD water ruts treacherous going! At times and places like this you appreciate the "surefootedness" that distinguishes the car equipped with the Ross Cam and Lever Steering Gear the stability, control and response that are always yours. Emergencies like this merely emphasize what Ross gives *all the time*.

ROSS GEAR AND TOOL COMPANY, 760 Heath Street, Lafayette, Indiana

ROSS
CAM and LEVER  **STEERING GEARS**
EASIER STEERING LESS ROAD SHOCK



Commercial Car Journal's

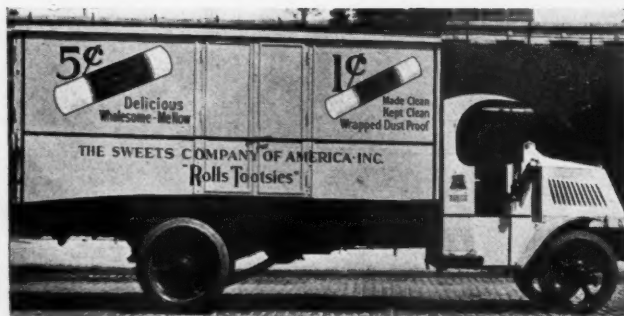
Above: Even the Horse is Not Forgotten in Our Modern Transportation Scheme

An interesting new type of body on a Sterling chassis for the transportation of horses recently put into commission by a Chicago hauler. The vehicle accommodates six horses and entrance is effected from either side or the rear. Storage space is provided for fodder and water, and three grooms can travel with the driver.



Left: Interior View

The stalls face the center, providing ample quarters for the horses. Grooms attending the horses have as much freedom of movement as in the stables. Perfect ventilation is provided.

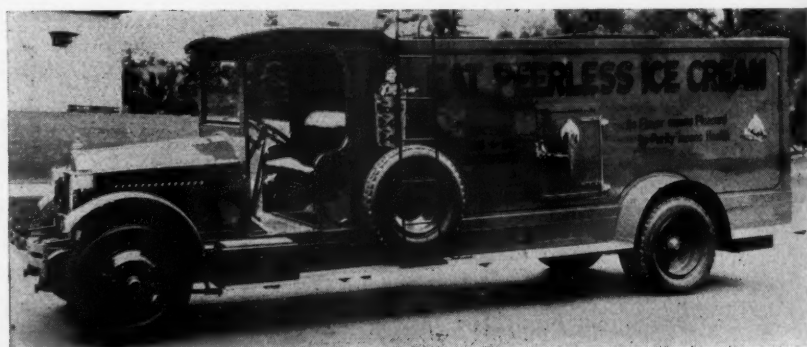


Left: Advertising Has Made the Tootsie Roll the Popular Sweet It is Today

The Sweets Company of America, Inc., is 100% believer in the value of advertising. It has availed itself of every opportunity of bringing its product before the public eye. Hence the enviable position of its product. The above illustration shows how this company is capitalizing on the advertising value of the truck as a mobile bill board.

Right: "Eat Peerless Ice Cream"

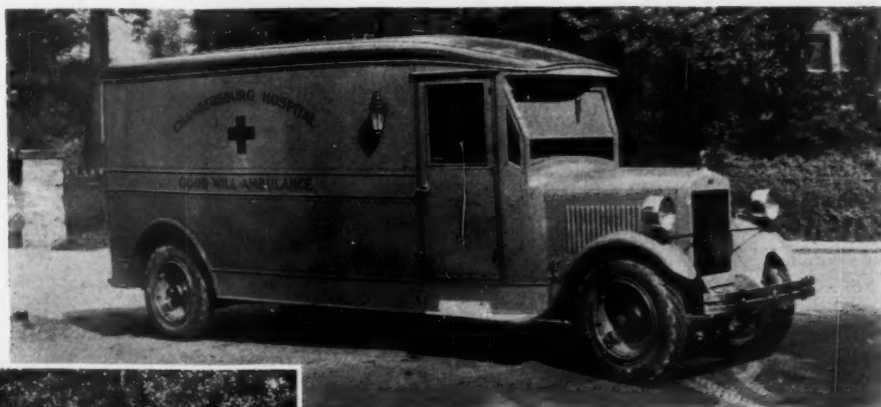
This cool looking proposition, which is a specially constructed body built on a Mack bus chassis with a compartment for ice and ice cream, is guaranteed to make the observer look around for an ice cream cone. Incidentally, this unit is used on the Pacific Coast and hauls over considerable distance, in which the refrigerator is a distinct feature.



Left: Used to Haul Milk 150 Miles Without Refrigeration

Less loss, lower costs and better sanitation are afforded creameries of today in the transportation of milk by using modern equipment. This all steel, glass-lined tank made by the Glascote Co., Euclid, Ohio, mounted on a Mack bus chassis is operated by Ira Wilson & Son for the Detroit Creamery Company. With it, it has been possible to transport 1000 gallons of milk more than 130 miles in an average of 16 hours, including frequent stops at collection stations.

Pictorial Review



Above: Modern Transportation Permits Meeting Accident Emergencies

The above view shows a new ambulance recently given to the City of Chambersburg, Pa. The body which is of special design in every respect, to permit ready first-aid treatment to the injured, is mounted on a model KB Garford truck. The chassis is equipped with a high speed six cylinder engine, together with the latest type four-wheel hydraulic brakes.

Right: Interior View

The ambulance, besides being completely equipped with all first-aid essentials, has a capacity for four patients, together with six additional persons.



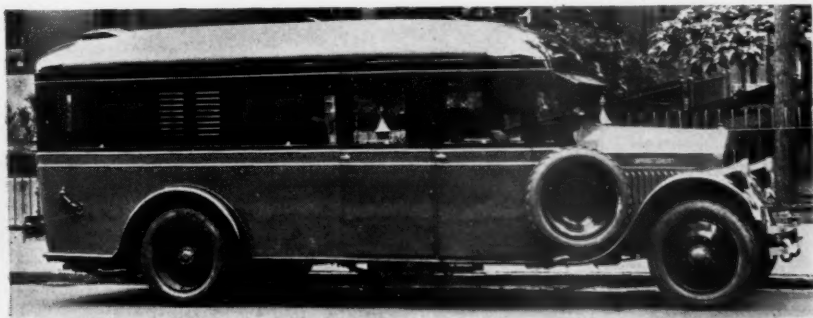
Right: Mobility Increases the Utility of Cranes

Motor truck cranes, by virtue of their mobility, today serve a large number of people whose business does not warrant the installation of hoisting device. The utility of the crane has been found expanded by the development of a lighter type as against the heavier models built for use on trucks of 5 ton capacity and over. To meet the growing demand for a light truck crane combination, the International Motor Company developed a crane for mounting on a Mack truck of 1½ to 2½ ton capacity. The view to the right is an illustration of this equipment.



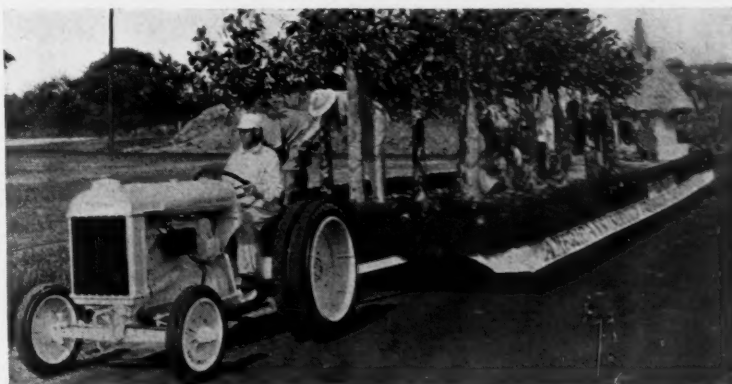
Left: No Home is Complete Without Its Bath

The owner of this luxurious traveling home has specified in its construction the incorporation of every modern convenience. It is complete even to a shower bath and radio. This "covered wagon" is owned by R. Connable, formerly managing director of F. W. Woolworth Company of Canada, and will be used by him and his family in a three-year tour. It is mounted on a Pierce-Arrow chassis.



Right: How Firestone Showed Akron City Its Rubber Plantation

This float which appeared in the Industrial Parade held late in July is an exact replica of a section of the Firestone rubber plantation near Monrovia, Liberia. This 50 ft. display drawn by a Fordson tractor depicted the actual foliage, vegetation, huts of natives, the laborers themselves and the overseer inspecting the tappings, as exist on this African plantation. This float received the grand prize in competition with 500 other units.



Can the Gas Truck Dealer Make Money Servicing Electric Trucks?

This Article Tells How a Bridgeport Concern Handles Electric Truck Service on a Profitable Basis

By C. P. SHATTUCK*



Exterior View of General Motor Service & Truck Company, Bridgeport, Conn., Which Organization Has Serviced Electrics for Years and Over 60 Per Cent of Station is Employed for Electric Service

ADVOCATES of the electric truck assure the gasoline truck dealer that he can merchandise and service the battery propelled vehicle without its conflicting with the gas unit. Also, they point out that the dealer handling electrics is in a position to obtain entree with many large concerns, to sell them both gas and electrics, as the unprejudiced transportation engineer will recommend both where short and long hauls are involved. But suggest to a dealer that he take on electrics and he will want to know if money can be made and what about the service end?

Gasoline and Electric

To answer these questions the writer visited the General Motor Service & Truck Company, Bridgeport, Conn., a concern enjoying the somewhat novel distinction of having handled the GMC line of gasoline trucks for some time and servicing electrics since the early days when the GMC electric was on the market.

The history of the Bridgeport Company in electrics dates back to the time two GMC electric demonstrators were placed in service and, at that time, there were no facilities in Bridgeport for charging the batteries. There is only one public electric garage for both the passenger car and trucks today and it is the concern with whom this article deals. Wm. E. Norris, founder of the company, and who died about a year ago, believed in service, so went to considerable expense in

*Staff of Society for Electrical Development.

installing electric charging equipment. In those days and up to the time of his death, Mr. Norris was a staunch advocate of the electric vehicle, so much so, that when the General Motors Company discontinued electrics he serviced electrics and continued to boost for them.

Ample Service Station

In 1920 land was purchased on Holland Avenue and a modern fireproof service station, 120 x 105 ft. erected. It is a one-story brick front building with wide double entrances and a large number of large windows which supply unusually good light. The offices are in front, of the raised or platform type, and

all sections of the service station or garage can be seen from any part of the offices. Directly under the offices is the stock or parts room where over \$15,000 of parts are carried for the GMC line in addition to material stocked in the electric service.

Electric Truck Service

Over 60 per cent of the service floor space is given over to electric trucks and passenger cars. There is a cement platform at both ends of the building, about 4 or 5 in. deep and 12 to 14 in. high. These platforms are provided with 42 charging plugs. The electrics are backed to this platform, being assigned space, and charged. The charging panels, motor generators, and other equipment, are located on the floor directly in back of the ground floor of the office. There is one entrance for the gasoline trucks and another for the electrics. The machine shop, well equipped, is at the rear, center, and to the left of this are the pits, benches, equipment, etc., or the service department for gasoline trucks, where electrics are also serviced.

The organization includes 17 persons and each division of the station is charged its proportionate share of the overhead, etc., and on the square foot basis. This supplies J. A. Jensen, president and general manager, with records of the operation of each department. This is essential in any business where the overhead is heavy.

The storage and care of the electric vehicles is on a flat rate basis, that is to

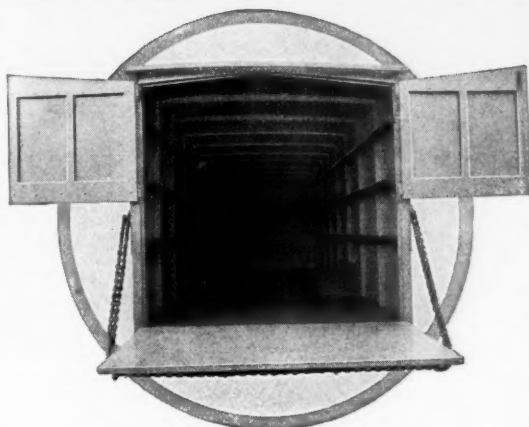
(Continued on page 58)



The Charging Panels, Motor Generators, Etc., of the Equipment Supplying Charging Facilities for 42 Trucks at One Time



Another RUGGLES ACHIEVEMENT—



Interior view showing padded side rails

A specially designed, low-hung van body for long distance moving, mounted on six cylinder bus chassis—

Six cylinder performance with extra power and stamina to go anywhere and back—

Dependability of Ruggles bus chassis construction with extra factors of safety and reserve strength beyond any probable strain or stress—

Long wheel base, enabling proper balance and ideal distribution of weight—

A low hung chassis that brings body close to ground for easy loading and elimination of rocking and swaying on the road—

Extra loading space without objectionable overhang—

Specially designed cab with berths for two men—

ALL FEATURES COMBINE TO MAKE THE RUGGLES BUS-VAN the ideal equipment for all concerns engaged in long distance transportation.

Write for literature and full information.

Ruggles Motor Truck Co.
SAGINAW, MICHIGAN, U. S. A.



This bus-van means additional profits for Ruggles dealers. Send today for Ruggles sales plan.

*Model 65
Bus-Van Chassis*

RUGGLES

Are You

Buying Profitable Delivery

by Knowing

Cost of Performance?

By C. W. PECK

IN the early days of the motor truck industry the buyer was interested in trucks primarily as labor-saving devices. The number of men he could eliminate by replacing horse-wagons with motor trucks was the determining factor in the purchase of trucks. From this early stage the motor truck has passed through many different stages of merchandising. There are a number of contributing factors responsible for the rapid motorization of delivery service, chief among which are the following:

Progress in Cost Accounting;
Greatly Increased Traffic Congestion;
Greatly Increased Labor Costs;
High Rents for Land;

Growth of the Passenger Car Industry and the consequent familiarity of almost every buyer with the general principles of a Motor Propelled Vehicle;

The desire to be modern and to capitalize on the advertising value of using modern methods and modern equipment.

About fifteen years ago there were three types of motor trucks: steam, gasoline and electric. The steam vehicle has made little headway, being supplanted almost to exclusion in the United States by the gasoline unit. The extensive use of gasoline trucks is a matter of common knowledge.

Recognized Delivery Agent

Although the use of the electric truck is not nearly as extensive as that of its component, the gasoline truck, its application has been spreading steadily and at an accelerated rate from year to year until today it is recognized as a firmly established factor in city transportation. With the decline in the use of the electric passenger car, the principle of the storage battery vehicle has suffered considerable discredit. This decline of the electric passenger vehicle is a natural result of progress. Gasoline passenger cars were steadily and rapidly improved so that today they are very easy to operate and provide comfortable transportation for unlimited distances. The ensuing improvement of country highways increased the demand for the vehicle with unlimited mileage capacity, which requirement the electric passenger car is unable to fulfill.

The storage battery vehicle is essentially a city unit and only those who can afford the luxury of more than one car continues to utilize the many advantages of the electric passenger car.

So, while the gasoline truck received the benefit of widespread advertising and publicity creating a public mind ready to receive it because of the gasoline passenger vehicle, the electric truck suffered by the decline of the electric passenger vehicle. Remember that the storage battery vehicle is essentially a city unit and remember that the majority of transportation of commodities within city limits requires a very low mileage capacity, and it is easy to see why growth of the electric truck has been hindered.

Because of the tremendous growth of our cities and because of the unprecedented demand for service on the part of the buying public, one of America's greatest problems today is **local distribution of materials and commodities**. In spite of this fact, it is plain to those who have had the opportunity to study the subject thoroughly that the man who has to purchase this delivery service is usually poorly equipped to make his decision because of the absence of really sound data from his cost accounting department.

Wants Economy

In order to decide what type of equipment to purchase, the business man wants to know which type will do the work at lowest cost and still maintain a high standard of service. Consequently, within recent years cost systems of one sort or another have been set up in practically all truck installations of size, and even users of one or two trucks are keeping some sort of record of costs. In these various systems, the final critical figure obtained is for cost per mile, yet cost per mile is only one of the factors involved in arriving at the true cost. In reality he is **buying goods delivered**. In other words, the true cost is the **cost of performance** and not the cost per mile or per ton mile.

Take for example ——— Baking Company, one of the largest bakers in the central west. Two gas trucks of the same, well-known make and of the same capacity, having been purchased at the same time, were operated in two differ-

ent zones. Zone One truck covered approximately 10 miles per day at a cost of 70.4 cents per mile. Zone Two truck covered an average of 50 miles per day, at a cost of 15.7 cents per mile. Zone One truck carried over one ton of bread while Zone Two truck was only delivering one-half the load at a slightly greater cost per day. Yet if compared on a per mile basis, it would be seen that the first truck was costing four times as much as the second truck. In this case, it is obvious that the cost per mile is dangerously misleading and that the figure which would tell the true story is that of the cost per unit delivered. Consequently, decisions based on cost per mile in such cases are bound to be poor. Yet this condition exists in most delivery departments today because of the prevalence of cost analyses made on the cost per mile basis.

Consider Variable Elements

Now, to reach a true cost for comparative purposes, which is essential when different makes and types are involved, it is necessary to go a step further than determining the cost per mile. There are many concerns today who keep their costs on a percentage basis, viz., the cost of delivery in ratio to the gross income derived from merchandise delivered. This cost is, of course, widely variable. Take, for example, the percentage cost in the department store field. The dollar is usually relatively high and the percentage cost of delivery is resultantly very low. On the other hand, the value of a retail load of milk is low in comparison with the cost of delivery. Therefore, in the milk distributing business, the percentage cost of delivery is relatively high. To obtain the percentage cost it is necessary to keep a record of the value of merchandise delivered per route. In the case of many industries this is more easily obtained by keeping a check of units delivered per route than to compute these units into dollar values or average values.

Just as truck users generally keep their costs on a cost per mile basis, so are horse users accustomed to keep their costs on a per day or per month basis. Still it is obvious that the user of horse-wagon equipment is not primarily concerned with

the purchase of delivery service on a monthly basis or daily basis inasmuch it is costing him to deliver goods. Again, as he is concerned with knowing what the cost per unit delivered is the ultimate figure of real informative value.

Take the case of a milk dealer whose records are at hand as this is being written. The horse-wagon was regularly delivering an average load of 30 cases valued at \$1.56 per case at a cost of \$98.75 per month or a cost per point (which is equivalent to a quart of milk) of .00914 cents. This unit was replaced with an electric truck which cost \$106.58 per month, with the result that the same driver on the same route with the same amount of time spent on the route had within five months built up that route to the cost per point down to .00607 cents. From an average of 44 cases per day, bringing this example, which is typical of thousands of other instances, we find the need of going further in analyzing the cost per month. Here, we find that although

the electric truck cost \$7.77 more per month than the horse-wagon, because of the greater load delivered, made possible by the greater speed and flexibility of the electric, the electric truck reduced the cost per unit by one-third.

Considering the particular application of delivery equipment, it soon becomes obvious that neither the cost per mile nor the cost per day nor the cost per month should be the deciding factor in purchasing transportation equipment. It becomes obvious that the true cost is only obtained by first zoning the vehicles according to mileage and then computing the cost per unit delivered in each zone, and finally making comparisons of the different makes and types of units according to their performance within their respective zones. Therefore, the business man who desires to be fully informed of the real facts before buying trucking equipment will require that his cost accounting department furnish him with the cost per unit delivered.



J. Stanley Conroy

General Manager of the Chicago Autocar Branch

posed, so that the simplicity of the double reduction driving principle is easily shown. One side of the axle exhibits a wheel and brake drum rotating on roller bearings, which facilitates explanation of the full-floating axle, and on the other side the braking mechanism is mounted.

In the center of the platform is the Autocar two-bearing engine. Off to one side of the display engine a frame is mounted on an Autocar spring assembly. The spring shackle display affords a good example of how protective bushings are put to use. At one side on the rear is a combination display of the Autocar, counterbalanced ball bearing crankshaft and the oiling system. The transmission gear case is also shown mounted on a stand with top and bottom removed, exposing the gear assembly and selective finger shift.

Portable Exhibit is a Sales Help

ACCORDING to J. Stanley Conroy, General Manager of the Autocar branch of Chicago, the portable exhibit used by this branch is a departure from the conventional method of truck selling in that recalcitrant buyers who could not be lured from their places of business to the salesroom would enjoy viewing the exhibit brought to them and invariably call other interested parties to this unique collection of motor truck mechanism.

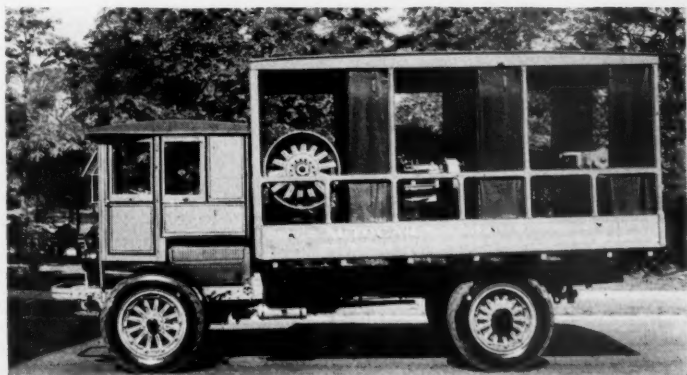
The exhibit car consists of a 13' 6" platform and canopy body mounted on a standard Autocar chassis, with a fully enclosed cab, built in graceful proportions, a solid bulkhead in front and 12" panel with a hand rail above it on the sides. Snugly fitting curtains cover the exposed sides and back while traveling. The entire job is painted standard Autocar red with black striping. On either side panel is written in gold lettering "Original of Autocar Model on Display at the Smithsonian Institute (National Museum), Washington, D. C., Typifying the Most Advanced Unit of Motor Truck Transportation."

On the bulkhead is mounted the complete bushing system of the Autocar. A few explanatory remarks concerning the 212 pieces of metal effecting inexpensive replacements with the attractive layout before the eye is an exceedingly interesting feature, rather than the "duck-back" reception such a mere statement usually receives.

The double reduction axle is mounted on a stand with the gear assembly ex-

Right: Interior View of the Exhibit. It Includes a complete collection of motor truck units.

Lower: Autocar Portable Exhibit Devised by the Chicago Branch to Stimulate Interest.



The Majesty of the Law of Transportation

What We Sell is Performance or Transportation, NOT a Truck. Sales Do Not Happen—They Are Definite Results

By A. M. PEARSON

WHEN we understand that the law of transportation is always at our command, that we may bring it into action at any time and that its power is absolute—then we are capable of applying it to any discordant condition which may confront us, whether it be truck sales or truck operating which needs government.

Transportation exists by absolute decree. It is created, supported and controlled in accord with the law of transportation. Law means or implies a rule that is established and maintained by power; that which is unchanging, unyielding and continuous; that which possesses performance and stability.

The efficiency of the law of transportation rests entirely in the power which enforces it. A law that is incapable of being enforced is not a law and bears no relationship to law. All the power there is, is on the side of law and that which breaks a law undermines its own foundation.

To Correct and Govern

THESE transport rules are applicable to every conceivable phase of truck performance. No situation or condition can possibly exist outside of the influence of this law. The effect of the operation of law is to correct and govern. When we scientifically bring this law into contact with an unfinished problem there is no question of possibility. The transportation or selling problem is solved. Nothing can prevent a natural legitimate adjustment.

There is not \$700 worth of difference between any two trucks of the same capacity **standing still**. The exception appears only during performance. **What we sell is performance or transportation, not a truck.** What we term a truck is simply so much latent energy confined in certain mechanical dimensions. Only when converted into transportation does this energy or truck have any value whatsoever. All the advertis-

ing and sales ability in the world would not sell a single truck were it not for this unused transportation. We only deceive ourselves when we imagine we can ignore it in truck sales.

To attempt truck sales on the basis of mechanics alone is like rattling an empty pan, all that is created is an empty sound. When we are willing to give up ignorant and uncertain methods, and **let the law of transportation govern sales, then and then only shall we behold trucks properly sold and satisfactorily operated.** There is no such thing as failure in scientific transportation.

The only language transportation understands is action. Every single bolt and nut in a truck has its part in transportation and it is quite possible to translate these parts into income producers during sales effort. Do not imagine sales just happen. They are the actual definite results of how much you know and how you carried this knowledge to your customer.

Selling is something like an enormous machine revolving constantly without regard for any one or anything. Feed it with the material of your knowledge and (because it is a machine) it will turn out the products of this knowledge, good or bad as the case may be. The greatest puzzle in truck selling is that we should go to the trouble to do things wrongly, when it is so much easier to make sales correctly.

It is a matter of no small moment to induce a truck buyer to give you money. He demands something in return, of course, but let us do our part. We surely

cannot make the return worthy of an expenditure if we merely peddle an inanimate machine. Indifferent methods of truck selling are always the outcome of ignorance not lack of ability. Ignorance subjects one to its own abuse of true conditions. Ignorance of the majesty of the law of transportation is the reason for the frightened idea of personal responsibility so often assumed in selling trucks. There is no such responsibility when selling transportation. Once we have stated the truth about transportation and applied it to the sale, we have done all we can do, and all that is necessary for us to do. The law of transportation will care for the rest, it has always existed and always will. No power of manufacturer or salesman can alter it or weaken its supremacy, whether we recognize it or not it is always present, active and absolute.

The Right Viewpoint

POSSIBLY when we translate the word majesty into the word authority we get some idea of the meaning and strength of the law of transportation. Truck selling operates under the authority of transportation, not under the ideas of mechanics, they only produce, not create. To most men authority means to do as they choose, power shorn of responsibility. Such authority collapses at the touch of a stronger power. The authority of transportation is the might and dominion of its law, and this law will continue after any group of men and in spite of them.

Do you want wealth, reputation and a mind free from care in truck marketing?

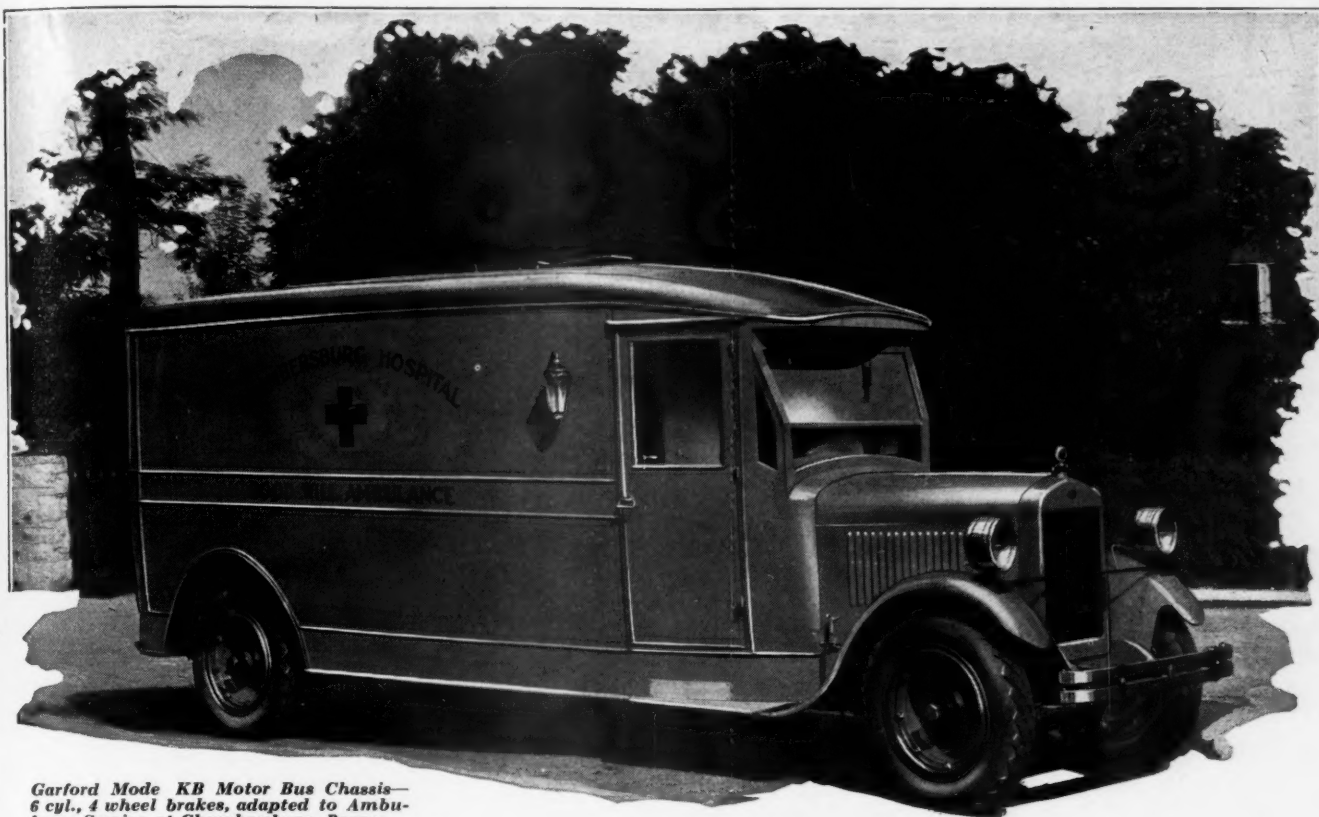
Learn to apply the law of transportation. It will bring them to your door. Here are the three governing rules:

1. A straight line is the shortest distance between two given points.
2. The regular and precise balance between traffic income and operation disbursement.
3. The classification of traffic carried on the displacement area in relation to its weight.



Latest Pierce-Arrow Sightseeing Bus

Designed like a modern Pullman observation car, complete to even rear platform with brass grille, decorated awning, running lights and brakeman's flags. This luxurious motor bus recently made its appearance in Los Angeles and is being used for sightseeing tours by Brown's Auto Tours Co., Los Angeles, Cal. The bodies are mounted on a dual-valve 220-in. Pierce-Arrow bus chassis and seat 21 passengers in individual wicker chairs upholstered in morocco leather. The five rear seats are of the swivel type, allowing the passengers to enjoy the landscape from any angle without the slightest inconvenience.



*Garford Mode KB Motor Bus Chassis—
6 cyl., 4 wheel brakes, adapted to Ambu-
lance Service at Chambersburg, Penna.*

GET THIS!

When a truck dealer can offer to his customers—transportation units that meet the user's requirements, a greater degree of success is assured that dealer.

Present opportunities are too good for a



dealer to content himself with less than the full measure of truck value and the full measure of sales co-operation, now at the disposal of dealers who are associated with GARFORD.

Have you thought of the benefit of representing a manufacturer who builds a complete line of motor trucks and motor buses that are engineered to handle the transportation problems that each buyer may have?

THE GARFORD MOTOR TRUCK COMPANY
LIMA, OHIO

MOTOR TRUCKS—1 to 5 TONS

MOTOR BUSES—15 TO 30 PASSENGERS

Buda Establishes Flat-Rate Engine Overhaul Plan

A LIST of flat rate charges has been adopted by the Buda Company at which any user of Buda engines can have that unit overhauled and rebuilt in the Buda factory. This means that the owner of a truck fitted with an engine of this make can get a factory rebuilt job at rates comparing with those of any high-grade repairer, and what is more the rebuilt engine carries the same guarantee as a new unit.

In establishing this system the Buda Company is of course co-operating with the truck manufacturer in providing the user with a maximum of the truck life at a minimum of cost, which is to the benefit of all concerned. In it the dealer has an added talking point of no small value. In making use of this service the dealer is not depriving his own service depart-

ment of any profit, for the price to the customer takes care of this angle. The truck manufacturer has a definite allowance under this scheme and the dealer can determine what his share of this is from his manufacturer.

Reduces Idle Time

So that a customer who has a disabled engine will not have to keep his vehicle idle while the overhaul is being effected, the Buda Company has instituted a system of exchange units. A rebuilt engine is sold to the customer at a published price consisting of a maximum overhaul charge as outlined under operation number (8), plus an allowance charge as noted at the bottom of this schedule. This is sent to him and he installs it in place of his worn unit. The latter he puts in

the crate in which the rebuilt came and sends it to the Buda factory. A cash or credit allowance is then made for the old unit, which is rebuilt, if its condition warrants and put into stock. Example: Supposing the customer wants a rebuilt model WTU engine for installation in his vehicle prior to sending in his old engine. His cost would be \$288 f. o. b. factory. When the old engine is inspected at the plant and is found to be in condition to require only operation number (1) the customer's credit will be the difference between \$288 and \$169, less any accrued incoming freight. The engine is then rebuilt and placed in stock, thus completing the cycle. Under this arrangement all the customer pays for is the actual charge for the work done to his own unit.

A list of the charges for the various models of the engines by operation is given. These are the prices to the customers and details are given showing exactly what is done to the engines at the various figures, together with the allowances shown at the bottom when the replacement unit scheme is taken advantage of.

List of Flat Rate Charges for Overhauling Various Models of Buda Engines

MODELS	MU WTU	CTU-GTU KTU	ETU FTU	XTU YTU	ATU BTU	RU WU	QU-OU TU	IU HU	ITU HTU	XU YU
1. Flat rate charge for complete overhaul where no major parts require replacement. This overhaul consists of re-grinding the cylinder block, fitting with new pistons and rings, re-grinding the crankshaft and replacing all minor parts where necessary, such as valves, pushrods, bearings, gears, etc.....	\$169.00	\$182.00	\$207.00	\$238.00	\$282.00	\$169.00	\$182.00	\$207.00	\$207.00	\$238.00
2. Flat rate charge as noted above, but necessitating the replacement of the cylinder block with a reclaimed block fitted with new pistons and rings. Replacement of block necessary account old block unsalvageable.....	185.00	213.00	250.00	288.00	344.00	185.00	213.00	250.00	250.00	288.00
3. Flat rate charge where conditions require the replacement of the crankshaft only, we to furnish a reclaimed crankshaft in addition to the general overhaul	191.00	213.00	238.00	282.00	344.00	188.00	207.00	238.00	238.00	282.00
4. Flat rate charge where conditions require the replacement of the complete crankcase assembly, we to furnish the crankcase in addition to a general overhaul	213.00	232.00	263.00	300.00	375.00	215.00	232.00	263.00	263.00	300.00
5. Flat rate charge where conditions require the replacement of the cylinder block and crankshaft, we to furnish reclaimed cylinder block and crankshaft in addition to general overhaul.....	207.00	244.00	282.00	332.00	407.00	204.00	238.00	282.00	282.00	332.00
6. Flat rate charge where conditions require replacement of the cylinder block and crankcase, we to furnish reclaimed material in addition to general overhaul	229.00	263.00	307.00	350.00	438.00	229.00	263.00	307.00	307.00	350.00
7. Flat rate charge where conditions require replacement of crankshaft and crankcase, we to furnish reclaimed material in addition to general overhaul	235.00	263.00	294.00	344.00	438.00	232.00	257.00	294.00	294.00	344.00
8. Flat rate charge where conditions require replacement of cylinder block, crankshaft and crankcase, we to furnish reclaimed material in addition to general overhaul	250.00	285.00	325.00	375.00	460.00	247.50	280.00	325.00	325.00	375.00
Allowance for old engine.....	\$38.00	\$55.00	\$64.00	\$73.00	\$99.00	\$37.00	\$54.00	\$60.00	\$64.00	\$69.00

When the old engine reaches the factory the first operation it undergoes is a thorough washing down by complete submersion in a cleaning solution. When thoroughly cleaned the mechanics disassemble it completely and such worn parts as guides, bearings, gears, valves, etc., are immediately scrapped.

The cylinder block is then carefully inspected for wear with an inside micrometer to determine the size necessary to grind to the required oversize dimension. Buda blocks are ground only in oversizes of .010" equivalents and only to the greatest diameter of forty thousandths oversize (.040"). If the block will not clean up at this largest oversize, it having been reground once or twice before, it is scrapped and a reground block furnished as outlined in operation (2). If the block can be reground to a size within the specified limits it is then put through the same grinding operations as a regular production block and when completed must pass the same rigid inspection, with micrometer and dial indicator graduated in thousandths of an inch, as a new block.

New Pistons Fitted

A new set of pistons balanced in themselves within one-quarter of an ounce are then fitted to the reground block with strips of feeler gauges, the thickness of which is determined by the bore size. Their practice is to allow (.001") clearance per inch of piston diameter. Next a new set of standard oversize rings are draw-filed for the proper ring-gap and assembled to the pistons. The block is now ready to be returned to the service department for reassembly to an engine.

Next the crankshaft is checked for regrounding to determine whether or not it is within the specified tolerated undersize limits which is minus (.025") of an inch, and if found in condition to be reground, it is sent to the machine department where it is handled on the same basis, going through the same operations, and passing the same inspection as a new crankshaft.

If the crank is found to be already reground at a previous overhaul or worn on the journals to such an extent to prohibit its further use, it is scrapped and a reground crank furnished from stock as outlined in operation number three.

The crankcase, connecting rods and other component are then carefully examined and referred to the various different departments as the case may be. The crankcase, after applying a new set of main bearings, both upper and lower, in addition to all new camshaft bearings, is mounted on a jig or fixture for reaming with a single blade reamer. This fixture was designed by their engineers and made in their own tool room for the purpose of holding the gear centers on the engine to the very close dimension of two thousandths (.002") plus or minus from the standard, thus enabling them to avoid any delay caused by not having the proper size gears in stock.

The connecting rods are fitted with new bearings and new piston pin bushings to be later fitted with standard size piston pins, also new bolts and nuts are put in all rods after which they are ready to be fitted to the crankshaft and pistons.

The major component parts are now ready for reassembly after which the engine is put on a dynamometer test stand and lapped in, in the same manner as a new engine for a period of three hours. It is then removed from the test block to have the lower case taken down for the inspection of all bearings and pistons. If the rotating and reciprocating parts pass inspection, the engine is again put on the test block and inspected for power and

quietness and given a final run under its own power for three hours. At the expiration of this period it is determined if the engine is free enough for hand-cranking, if not it is run until absolutely free for hand-cranking. It is then removed from the test block and painted, looks just like a new engine and bears the same guarantee as a new one, which is for a period of six months, against defective material or workmanship.

Detroit Co-ordinated Coach and Rail Service

The Department of Street Railways of Detroit recently conducted tests of a co-ordinated coach and rail service. This department had been making a study of the so-called "four-track" type of operation to cover practically all of its main arteries.

The time saving element is a considerable feature under this arrangement of

afforded by subways and without the additional expense for the same.

A decision as to which unit was to be employed for express service or local service was determined entirely by certain characteristics most adaptable to the service to which they were fitted. This phase of the subject will probably be given further consideration as the test was not sufficiently comprehensive to entertain all details.

The four-track operation scheme is expected to produce the greatest good for the greatest number and will therefore receive public approbation and support.

JERSEY LABELS TRUCKS

All commercial vehicles in New Jersey must bear in conspicuous letters the name of the owner and the town in which he lives, in accordance with a law passed by the State Legislature. The purpose of the law, according to William Dill, commissioner of the State Motor Vehicle Bureau, is to prevent operation of vehicles for unlawful purposes by providing ready identification of owners.

transportation and for that reason will be of interest to many other cities which are also studying better service and time saving methods. Under the plans proposed the coach is used to render express service and the trolley local service. It was found that a saving of 19 minutes is effected in an operation of 7.8 miles. It is pointed out that this very nearly approximates an express service, such as is

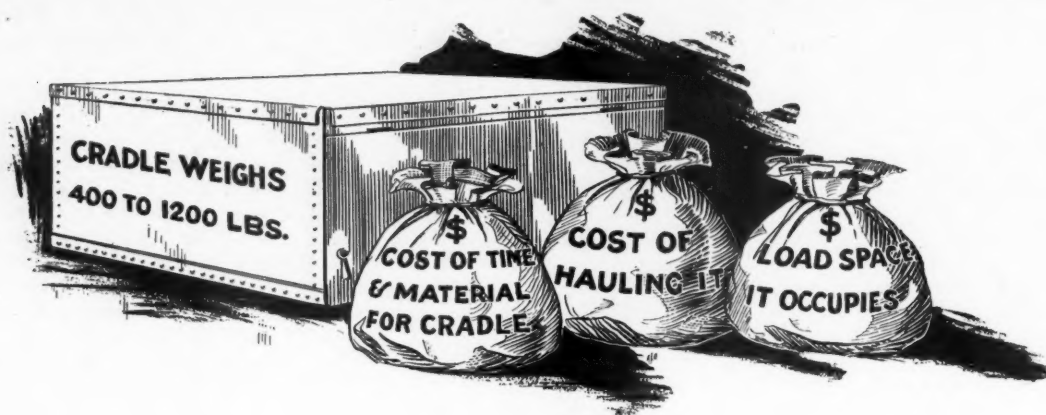
Exhaust Horns Outlawed in Massachusetts

Motor car and truck owners were lately notified through a public statement on the so-called Buell whistle and all other horns operated by the exhaust were outlawed in the State of Massachusetts. A new regulation also goes into effect whereby every vehicle must have a windshield cleaner, or the windshield must be kept open in wet weather.

Any persistent failure to obey these regulations will be penalized by registration revocation and suspension of operator license. There are thousands of cars and trucks equipped with the so-called Buell exhaust horn. Whether or not the motorists or the horn people will seek any legal action is uncertain. Some feel that the notice was not sufficient to permit changing equipment.



City of Detroit Employs a Co-ordinated Coach and Rail System of Service



How much does a Cradle Cost?

The battery cradle on a light electric truck weighs about 400 pounds. A cradle on a heavy electric truck weighs up to 1200 pounds. This needless cradle costs money in labor and material.

But the greatest cost—the enormous cost—is carting that 400 to 1200 pounds around for ten to fifteen years; for you know a good electric truck always lasts ten years and there are plenty that have been in constant use for more than twenty years.

Think of hauling all that cradle weight all those years when payload might be hauled instead.

During the life of the truck the driver's wages may amount to as much as \$20,000.

If one-tenth of his payload is displaced by cradle, then there is an efficiency loss of one-tenth of his wages or \$2,000.

The other expenses of the truck—fuel, tires, lubrication, repairs, garaging taxes, licenses—can easily amount to another \$20,000 during the long life of an electric.

Again when a cradle displaces one-tenth of the payload, it wastes one-tenth of the truck's expense—perhaps \$2,000 more.

It is not too much to say that doing away with a cradle means \$3,000 to \$4,000 to you.

Why carry this dead weight? Why build a cradle and hang it on the chassis when the chassis itself is better able to support the battery without any cradle.

The space that a battery takes on top of the chassis is not a factor, because the load in tons and not body-space is the measure of a truck's capacity. A 1200-pound cradle, for instance, curtails the truck's load just 1200 pounds. But with a truck's body space there is *elasticity*. The body is easily built sufficiently large to accommodate the battery and also the extra load that the truck can carry by reason of not being burdened by a cradle.

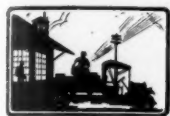
Ward is the pioneer in abolishing the cradle. Also he was among the first to use the worm drive. Now 70 per cent of all trucks are worm driven. Soon all electric trucks will be *cradleless*.

There is sales value in the cradleless idea.

WARD MOTOR VEHICLE CO., Mt. Vernon, New York.

WARD ELECTRICS

are Cradleless



EDITORIALS



Speaking of Over-Allowances

IN connection with the Used Car Truth Campaign which is being carried on in various cities by automobile dealers in co-operation with the N. A. D. A., it has been discovered that the "refusal of the used car buyer to pay more than a fair price for used motor cars purchased from automobile dealers is dealing a death blow to the practice of making over allowances when a car owner trades his used automobile in on a new one." In consequence, it is reported, that both used car purchase prices and used car sales prices are today at their lowest point in the history of the business, and values greater.

If this same campaign were extended to truck allowances it would be a good thing for all concerned. The truck industry has battled with the over-allowance problem for years, but no plan or scheme will go over unless the dealer as an individual makes up his mind that giving high allowances for junk only means throwing away profits.

Still a Virgin Field

ACCORDING to Government estimates for 1924, there are 4,200,000 automobiles on the 6,500,000 farms of the United States and 370,000 motor trucks. Certainly these figures in themselves bear evidence that the number of motor trucks on the farms is very small compared to the actual number of farms. It's really a drop in the bucket. Of course, there are some farmers who don't need a truck. Others contend that many farmers use their passenger cars as trucks, so that a lot of those trucks that are registered as passenger cars ought to be registered as trucks. But the reader may be thinking, as Ring Lardner says, "What of it?"

Just this. That there are plenty of good customers in the farming communities, who are willing to buy well-built, high-class motor trucks provided they know they can get proper service. It seems that many dealers have the opinion that the farmer is interested only in the cheapest truck he can buy, and therefore many dealers pay little or no attention to the farm market.

There's another reason why the farmer will become a greater buyer of the high grade truck than he is today and why more trucks will be needed

on the farms. The farm near the big city or town is fast becoming the residential and business center of tomorrow. Farms are literally being pushed farther and farther away from the metropolitan centers. The more distant the farm from the city the larger the load the farmer must carry. This applies particularly to the produce or truck farmer. He is a good prospect for a larger and better built truck.

But he has to be sold. Many dealers would unquestionably be well repaid in making a consistent effort to get more farmer prospects. The farmer who uses his passenger car for hauling farm products ought to be a good prospect for a truck. Certainly pigs and calves have no place in the touring car tonneau, much less in the family sedan.

Where Preparedness Counts

RECENTLY the A. A. A. received a letter from an association asking to be placed on their mailing list "for any information that you have to send out from time to time, as we are beginning now to compile figures and facts to combat legislation **two years** from now."

This indicates the right spirit. The reason many bills are passed which are inimical to the automotive industry, especially in state legislatures, is because no constructive work has been done by the opposition until the eleventh hour. Nothing produces quite as much an effect on legislative members as an avalanche of letters and telegrams, plus figures and facts, telling them just why the proposed bill should be killed or amended, as the case warrants.

We still have a tax on truck chassis and parts. These ought to be eliminated. The N. A. C. C. is campaigning now to eliminate them. Although Congress has eliminated the tax on the truck chassis price, wholesale, of \$1,000 or less, all truck chassis above this price are still taxed.

Motor truck manufacturers who are now taxed are urged to talk with their congressmen and senators so that there will be no difficulty experienced in the tax being eliminated in the bill to be prepared this October. If every dealer, individually and through his local dealer organization, will make it his business to do his share, then the campaign of the national associations will be materially strengthened.

News of the Trade

General Motors Recognizes All Replacement Parts Outlets

IN the new parts distribution plan of General Motors of Canada recently introduced the dealer and independent garage man is recognized as a part of the structure through which the car manufacturer may distribute his parts. Under the plan, the independent can secure standard parts at a discount from General Motors of Canada or its dealers. This discount is such as to provide the dealer with a profit and at the same time make it profitable for the independent or competing car dealers to buy parts from the dealer.

The plan is also designed to guide dealers in purchasing so they will get rapid turnover. The factory has classified all parts as to probable rate of sale. With this information the dealer knows when he places an order for a certain part, about what the demand for it is likely to be.

Under this plan many of the cobwebs of precedent in parts distributing as promoted by the car manufacturer are swept

away. Car sales competition among dealers too often has led to a hostile attitude towards competitive car dealers which extend into selling them parts to recondition "used cars." Often no courtesy discount has been given. Often the parts could not be procured at all among the different dealers. Now the dealer or independent garage man who qualifies under this plan receives an adequate discount, and, in the case of a competitive dealer, usually will gladly extend this same courtesy in return. This means that General Motors of Canada, Ltd., has recognized in a broad way that their car owners should be able to procure General Motors parts no matter where the repairs to the owners' cars may be made.

Buses Exclusive Carriers in 786 California Towns

Out of a total of 1,832 cities and towns in California, 786, or nearly 43 per cent of those served by bus lines, have no other means of common transportation. There are over 1,000 bus routes in that state.

Trailer Association to Co-operate With Power Unit Makers

IN accordance with a policy proposed at a meeting of the Trailer Manufacturers Association held in Detroit recently, Manager A. P. Ames of the association is ascertaining the views of leaders in the truck and tractor business as regards better co-operation between the truck and tractor and trailer industries.

In publishing facts and figures of trailer economies hereafter, the trailer association will pay more attention to complete installations and to the automotive end of trailer combinations. At the same time the association's purpose will be to furnish general information for the use of truck and tractor salesmen.

Additional proof that the trailer association is willing to co-operate with the truck and tractor builders is evidenced by its amending its by-laws at the last meeting so as to permit them to join the organization as associate members, a privilege formerly limited to manufacturers of trailer parts and accessories.

CONVENTIONS

- American Bottlers of Carbonated Beverages**—Annual convention and exhibit will be held in the American Royal Bldg., Kansas City, Mo., October 19 to 23. Show headquarters, 231-237 Woodward Ave., Detroit, Mich. Secretary's office, 726-729 Bond Bldg., Washington, D. C. Joseph R. Flynn.
- American Electric Railway Association**—44th annual convention will be held October 5 to 9, 1925, on Young's Million Dollar Pier, Atlantic City, N. J.
- American Road Builders' Association**—Annual convention and Road Show, January 11 to 15, 1926, Coliseum and adjoining building, Chicago.
- American Society for Steel Treating**—Annual convention will be held September 14 to 19, 1925, at Cleveland, Ohio.
- Automotive Equipment Association**—Convention and show, November 9 to 14, 1925, Coliseum, Chicago, Ill. Wm. M. Webster, Commissioner.
- American Welding Society**—Fall meeting—October 21 to 23, Boston, Mass. M. M. Kelly, sec'y.
- Asphalt Association**—4th annual asphalt paving conference, October 21 to 23, Detroit, Mich. Headquarters 441 Lexington Ave., New York City.
- Iowa Automotive Merchants Association, Inc.**—7th annual convention will be held November 12 and 13, 1925, in the Fort Des Moines Hotel, Des Moines, Iowa. A. J. Knapp, sec.-mgr., 514 Old Colony Bldg.
- Motor and Accessory Manufacturers Association**—Fall convention, October 7 to 10, 1925, Montreal, Canada.
- National Automobile Chamber of Commerce**—Second World Motor Trade Congress, January 11 to 13, 1926, New York City.
- National Battery Manufacturers Association**—Convention, September, 1925, New York City.
- National Safety Council and Exhibit**—14th annual congress will be held September 28 to October 3, 1925, in the Rainbow Room, Hotel Winton, Cleveland, Ohio. A. M. Smith, business manager, 168 N. Michigan Ave., Chicago, Ill.
- National Standard Parts Association**—Convention and show, November 5 to 7, 1925, Chicago.
- National Tire Dealers Association**—Annual convention will be held November 17 to 19, 1925, in St. Louis, Mo. Chairman of arrangements, S. L. Chorlins, 3908 Washington Blvd., St. Louis.

Coming Events

- Pan American Confederation for Highway Education**—The Pan American Road Congress, October 3 to 13, Buenos Aires, S. A. S. T. Henry, director.
 - Pennsylvania Automotive Association**—5th annual convention, October 12 to 14, Pittsburgh, Pa. R. C. Duffs, Mgr., 306 Security Trust Bldg., Harrisburg, Pa.
 - Society of Automotive Engineers**—Service Engineering meeting, November, 1925.
- ### SHOWS
- Atlantic City, N. J., October 5 to 9, 1925**—44th annual exhibition will be held on Young's Million Dollar Pier, under the direction of the American Electric Railway Association. Railway apparatus and devices of all kinds, buses, chassis, wagons, snow plow. Fred C. J. Dell, director of exhibits, 292 Madison Ave., New York City, N. Y.
 - Boston, Mass., October 10 to 17, 1925**—World's Rubber and Tropical Exposition will be held at Mechanics Hall, Chester I. Campbell, manager.
 - Chicago, Ill., January 11 to 15, 1926**—Annual road show and convention, direction American Road Builders' Association, Coliseum and adjoining buildings.
 - Chicago, Ill., January 30 to February 6, 1926**—Annual show, Coliseum, direction National Automobile Chamber of Commerce.
 - Cleveland, Ohio, September 28 to October 3, 1925**—14th annual exhibit will be held in the Rainbow Room, Hotel Winton, under the direction of the National Safety Council, Safety devices and traffic signals. A. M. Smith, business manager, 168 N. Michigan Ave., Chicago.
 - Dallas, Texas, October 10 to 25, 1925**—Annual show to be held in the State Fair Automobile Bldg., under the Dallas Automotive Trade Ass'n. J. H. Connell, manager.
 - Danbury, Conn., October 5 to 10, 1925**—5th annual Fair will be held in the Danbury Fair Auto Bldg. (20,000 sq. ft.), under direction of the Danbury Agricultural Society. Passenger cars, trucks, tractors, accessories, etc. H. Lake, Mgr., West St.
 - Fresno, Cal., September 28 to October 3, 1925**—15th annual show in connection with the Fresno District Fair, under the direction of the Fresno Motor Car Dealers Association. Passenger cars, trucks and accessories. Ray C. Wakefield, manager, 311 Powell Bldg.

- Grand Rapids, Mich., September 7 to 12, 1925**—7th annual show in connection with the West Michigan Fair, under the direction of the Grand Rapids Auto Dealers Association. Passenger cars, trucks, tractors and accessories. Wm. T. Morrissey, manager, 220 Ashton Bldg.
- Indianapolis, Ind., February 15 to 20, 1926**—15th annual show, Auto Show Bldg. (70,000 sq. ft.), under direction of Indianapolis Auto Trade Ass'n. Passenger cars, trucks and accessories. John Orman, Mgr., 328 N. Delaware St.
- Kansas City, Mo., Oct. 19-23, 1925**—Annual A. B. C. Beverage Exposition, under the auspices of the American Bottlers of Carbonated Beverages. Show manager James Vernon, Jr., Chairman A. B. C. convention and exposition department, with headquarters, 231-237 Woodward Ave., Detroit, Mich.
- Kansas City, Mo., February 12 to 19, 1926**—20th annual show, American Royal Bldg. (250,000 sq. ft.), under direction of Kansas City Motor Car Dealers Ass'n. Passenger cars, trucks, tractors, accessories, aeroplanes and radio. Geo. A. Bond, Mgr. Firestone Bldg.
- Milwaukee, Wis., January 9 to 17, 1926**—Annual show, Grand Central Palace, direction National Automobile Chamber of Commerce.
- Sacramento, Cal., September 5 to 13, 1925**—71st annual State Fair. Passenger cars, trucks, tractors and accessories. C. W. Paine, manager, P. O. Box 592.
- Salt Lake City, Utah, October 1 to 7, 1925**—3rd annual automobile show and 47th annual State Fair will be held in Coliseum Bldg. Passenger cars, trucks, tractors and accessories. Wm. D. Sutton, supervisor of automobile show, 116 State Capitol.
- San Francisco, Cal., November 9 to 14, 1925**—All-Western Road show, in tents on 18 acre site on the Marina.
- Shreveport, La., October 24 to November 8, 1925**—20th annual State Fair. Passenger cars, trucks and tractors. Geo. T. Bishop, manager, c/o Bishop Auto Co.
- Wheeling, W. Va., September 7 to 12, 1925**—11th annual State Fair will be held in the Exposition Bldg. (25,200 sq. ft.), in Dealers Association. Passenger cars, trucks, tractors, accessories, oils, etc. Bert H. Swartz, secretary the W. Virginia State Fair, P. O. Box 116.
- White River Junction, Vt., September 15 to 18, 1925**—19th annual Twin State Fair will be held in the Auto Bldg. (13,600 sq. ft.). Passenger cars, trucks and accessories. F. L. Davis, manager.

Facts Concerning the Rubber Situation

Potential Output of Growers Sufficient to Meet the Growing World Demand

THE sky-rocketing of rubber prices has received the attention of a universal audience. Manufacturers, distributors, dealers, retailers and users alike have felt the effect of rubber's activities. Considerable concern was at first manifested by those not familiar with the influences and purposes behind the peculiar behavior of rubber. Some feared that the prohibitive price of rubber would result in an ultimate high tire cost. But such was not the case. It was soon learned that the soaring prices were merely a temporary reaction resulting from an effort to stabilize the rubber market and protect the growers.

Albert A. Garthwaite, Vice-President and Treasurer of the Lee Tire & Rubber Co., in an interview gave a very clear exposition of the rubber situation. He said:

"The soaring prices of raw rubber these days has quite naturally affected the cost of automobile tires to the consumer. Notwithstanding the almost prohibitive price of rubber which exists at this time, it can be said, however, that the public is not being asked to pay for tires a price commensurate with the existing price of rubber, nor does it seem they ever will be.

"It is commonly said that today there is a crisis in rubber on account of its high price, but there was a far greater crisis in rubber in 1922 on account of its low price when it fell to 16 cents per pound. Such a condition threatened to bankrupt plantations the world over and it was to safeguard the production of a commodity for which the world has a myriad of uses that the British, who control the bulk of the rubber plantations, framed the so-called 'Stevenson' Restriction Act effective November 1st, 1922, providing for a 'standard production.' For each individual rubber estate, the exportable allowance of the total standard production was set at 60 per cent during the first quarter in which the Restriction Act was in force. Rubber at the inception of the Stevenson plan was in the neighborhood of 18 cents per pound. It was agreed that a greater percentage of the crop would be released for export as the price advanced, the contrary to be the case if the price fell.

"If in the two years subsequent to the enforcement of the Stevenson Plan rubber had remained at 30 cents per pound the restriction would have been off by November, 1924. If rubber had remained at 36 cents per pound for one year only, the restriction would have to terminate by November, 1923.

"But hand-to-mouth, panicky buying, even in the face of low prices, was the order of the day. World's stocks were great and rubber fell to below 20 cents per pound, one year ago, causing a further curtailment of the export allowances from the British plantations of 50 per cent.

"Since its enforcement, the motives and details of the Stevenson Plan have been given wide publicity. The apparently limitless world stocks of rubber, however, caused a long term of spasmodic rubber buying at unfavorable prices for the rubber grower. Recently it has become apparent that the Stevenson plan has teeth in it. With the dwindling of the visible supply of rubber, the restrictive force of the Stevenson plan is reflected in soaring rubber prices. Whatever crimes may be laid at the door of British rubber growers, it cannot be said that prevalent rubber prices are due to decreased production. They are, on the contrary, the result of increased demand.

"The Stevenson Plan, despite its critics, is, in effect, saving the rubber growing industry and stabilizing the rubber market. The United States, consuming 75% of the world's rubber, should be vitally interested in its conservation plan. The low rubber prices of a year ago carried its corrective in a further restriction of exports. The high prices of today will automatically bring about increasingly larger releases from the plantations on August 1st, November 1st and February 1st, 1926, by which time releases will be normal, and on May 1st, 1926, the Restriction Scheme will automatically lapse, barring another slump in rubber under 24 cents per pound.



George H. Duck

Mr. Duck, Business Manager of the **COMMERCIAL CAR JOURNAL** and **MOTOR TRANSPORT**, severed his connection with the Chilton Class Journal Company on August 13th. During the eight years Mr. Duck has been with this organization, he has occupied the positions of advertising salesman, western manager, with headquarters at Chicago, and business manager of the publications mentioned at Philadelphia, Pa.

California 4% Tax Law Causes Concern

California Law Similar to Old Law, Which Was Held Unconstitutional

OPERATORS of motor vehicles in California engaged in the transportation of passengers or property for compensation are very much concerned in the provisions of a new law which became effective July 24th that taxes them four per cent of their gross receipts. This law was passed at the 1925 session of the legislature and is quite similar to a law that was passed in 1923 and held unconstitutional by the California supreme court.

The new law contains a clause which repealed the previous act, under the provisions of which several hundred thousands of dollars were collected from operators. After the supreme court held the 1923 act to be unconstitutional, rehearing was granted, but inasmuch as the 1925 act repealed the former statute that measure is regarded as dead. The income from the previous act went into the state treasury and can be refunded only by an appropriation made by an act of the legislature.

The enforcement of the new act rests with the state boards of equalization and control, and injunction proceedings in the nature of a friendly suit are now in contemplation. The state authorities are said to favor such action inasmuch as they are not inclined to go to a heavy expense for the necessary administration of the law if there is a likelihood of it being declared unconstitutional.

The passage of the law is said to have been accomplished by influences representing the rail carriers and the farm bureaus. Although the vast bulk of farm produce in this state is moved by motor trucks, the organized farmers' representatives favored the passage of the bill on the allegations that trucks have damaged the highways and furthermore their services have resulted in the annulment of rail facilities that formerly served the rural communities.

U. of M. 1925-1926 Graduate Short Period Highway Courses

During the months of December, 1925, to March, 1926, inclusive, the University of Michigan will offer twenty-one professional Short Period Courses in Highway Engineering and Highway Transport especially designed for mature men in practice or preparing for positions in the fields of Highway Engineering or Highway Transport or with companies manufacturing machinery or materials used in Highway Engineering or motor trucks, trailers or motor coaches.

Eighteen of these courses are open to any person over twenty-one years of age. Each course will consist of thirty lectures, will be given in a period of two weeks, and will count as two hours' credit towards the total of twenty-four hours required for the Master's degree. The fee for each course will be \$10.

New England Truck Registrations Show Big Increase

Each of the Six New England States Established New Registration Records. Massachusetts Leads With 87,015

MOTOR truck registrations for New England now available for comparisons by periods of months and years furnish some interesting statistics for those engaged in commercial vehicle transportation. It shows that for the first six months of 1925 there were registered in all New England 168,347 trucks. Massachusetts led with 87,015 which was more than the other five states combined with their 81,337. Connecticut ranks second with 32,745; Maine third with 20,000; Rhode Island fourth, having 15,654; New Hampshire fifth with 8,592 and Vermont sixth with 4,341. Here are the figures:

REGISTRATIONS TO JULY 1, 1925

	Trucks
Maine	20,000
New Hampshire	8,592
Vermont	4,341
Massachusetts	87,015
Rhode Island	15,654
Connecticut	32,745
Totals	168,347

Figures showing the registrations for the first six months of 1924 compared to the same period this year are interesting also. It shows that this year for the same period every state registered more trucks, with the Bay State leading the field, having a jump of 6777. The others did likewise in about the same position as they were in the totals. Here are the totals:

The truck registration July 1, 1924; July 1, 1925:

	1924	1925	Increase
Maine	15,798	20,000	4,202
New Hampshire	7,600	8,592	992
Vermont	3,561	4,341	780
Massachusetts	80,238	87,015	6,777
Rhode Island	14,268	15,654	1,386
Connecticut	29,142	32,745	3,603
Totals	150,607	168,347	17,740

Also worth comparing are the figures for the first six months of each year covering a period of six years. It shows how some months have continued along with a steady percentage of increase while other months fluctuated a bit. These latter included March and May, so that it cannot be attributed to winter weather.

Then there are the figures showing the total registrations for all the New England States of commercial vehicles, ending December 31 each year, for 1921, 1922, 1923 and 1924. These figures show that while there have been 168,347 trucks registered up to July 1 this year, there were 173,050 listed for the entire year of 1924, so that there yet remains some 4700 more needed before this year evens up the last full year's total. It is expected that shortly the total will be passed. Here are the figures:

Massachusetts Truck Registration Jan. 1-July 1 For Six Years

	1920	1921	1922	1923	1924	1925	Gain over 1924
January	33,538	38,712	43,831	50,722	60,697	64,465	3768
February	728	1,427	1,789	2,176	2,415	3,469	1054
March	2,330	2,642	3,680	4,024	3,958	5,133	1175
April	3,347	2,450	3,626	5,624	5,521	5,669	148
May	2,475	2,017	3,557	4,898	4,373	4,414	41
June	2,080	1,761	2,420	3,232	3,340	3,865	525
Totals	44,498	48,009	58,903	70,676	80,304	87,015	6711

However, as the total gain last year for New England was more than 34,000 and the preceding year it was some 9,000 with a 20,000 jump in 1922 it is not difficult to realize that the difference that existed between the July 1, figures this year and the December 31, total of 1924 will be overcome shortly. Here are the totals annually:

New England Registrations For Past Four Years

	1921	1922	Increase
	Trucks	Trucks	Over '21
Maine	9,936	13,842	15,012
New Hampshire	5,045	6,136	6,254
Vermont	3,487	2,640	6,916
Massachusetts	55,561	70,999	86,806
Rhode Island	9,898	13,011	11,509
Connecticut	27,210	26,046	17,149
Totals	111,137	132,674	143,646
	1923	1924	Increase
	Trucks	Trucks	Over '23
15,614	16,070	19,364	16,093
6,988	11,278	7,542	12,141
3,356	8,895	4,254	8,403
68,205	26,312	91,826	196,165
15,727	19,014	16,064	5,172
29,140	23,256	34,000	37,069
139,030	104,825	173,050	275,043

The table showing how the registrations for the first six months this year compares with the entire year of 1924 is worth studying. It shows how Maine, New Hampshire and Vermont were going ahead while Massachusetts, Rhode Island, and Connecticut fell behind in truck registrations.

TRUCKS

	Total for Year 1924	To July 1 1925	Gain	Loss
Maine	19,364	20,000	636	....
N. Hamp	7,542	8,952	1,090	....
Vermont	4,254	4,341	87	....
Mass	91,826	87,015	....	4,811
R. I.	16,064	15,654	....	410
Conn.	34,000	32,745	....	1,155
Totals	173,050	168,347	1,813	6,370

Indiana School Buses Exempt From Tax

According to an opinion just handed down by A. L. Gillion, attorney-general for Indiana, motor vehicles which are used exclusively for the transportation of school children under contract with a school corporation, irrespective of the ownership of the vehicle, are not required by the automobile license law to be registered as motor buses. Such buses do not come within the provisions of that law which provides a fee of \$6 per annum per person, for the carrying capacity of each bus operated for hire over any of the public highways of the state on a regular schedule and rates.

Mr. Gillion ruled that such vehicles come within the exemption regardless of whether the ownership is vested with the school district or private individuals who operate under contract with the school corporation. There has been much dispute throughout the state concerning this point, and an opinion was asked for.

Federal Aid Plans Approved by Motorists as Essential

A. A. A. Vigorously Advocates Continuance of Federal Highway Aid Plan. Helps Undeveloped Sections

THE resolution recently passed by the American Automobile Association at its convention at Atlantic City, recommending the continuance of the present Federal highway policy is a testimonial as to the attitude of the motoring public toward the value of unrestricted road development. Discontinuance of the Federal highway program before the completion of highway plans in the undeveloped sections of the country is considered by A. A. A. members as poor economics.

Most of the criticisms leveled at the plan have been based on the fact that states do not receive for highways amounts commensurate with the contributions to the general fund by means of income tax. No satisfactory explanation as yet has been advanced to the motorists of the country as to why the per cent of distribution of Federal aid should be based upon the amount of income tax paid into the general fund of the Federal government.

In the estimation of the A. A. A. it is a case of pure selfishness for some of the eastern states, which have nearly completed their construction program, to favor the discontinuance of the Federal aid program. The Federal Good Roads Bill authorizing appropriations for 1926-27 met the opposition of five senators when it came up for vote in the upper chamber. Two of these senators were from Pennsylvania. Senator Reed of that state desired to reduce the authorization considerably by an amendment. He said "The sooner the Federal Government gets out of the business of state subsidies the better for all concerned."

This is a most unusual attitude, especially in face of the fact that Pennsylvania occupies a most favorable position to benefit by a broad national good roads program. That state produces 10% of all crushed stones used for paving roads, 11% of all paving sand, and 22% of cement. Through its extensive petroleum refining industries it produces 9% of the gasoline. Pennsylvania also produces 39% of all the steel produced in the United States, one-tenth of which is used in the construction of motor vehicles.

Aside from the economic soundness of fostering the Federal aid program, why should Pennsylvania, in view of its said resources of raw road building material advocate a secession of subsidies in the national road building program?

Buses Exclusive Carriers in 786 California Towns

Out of a total of 1,832 cities and towns in California, 786, or nearly 43 per cent of those served by bus lines, have no other means of common transportation. There are over 1,000 bus routes in that state.

Another Railroad Official Recognizes Motor Transportation

**L. F. Loree, President of the D. & H.
Feels That the Truck and Bus Has a
Distinct Economic Place in
National Transportation**

MOTOR trucks and buses, although holding an increasingly important place in transportation, will not, in the estimation of L. F. Loree, president of the Delaware & Hudson Railroad, undermine the prosperity of American railroads. Mr. Loree, who has completed a thorough study of the bus and truck situation, states that motor transportation has a distinct economic place. It is interesting to note that the list of railroad executives recognizing the economic utility of motor transportation is rapidly increasing.

Mr. Loree further states that he believes that when business can be handled better in certain sections of the country by bus and truck, railroad lines should be scrapped. It is believed that at least 30,000 miles of existing railroad lines could be profitably abandoned in favor of motor vehicles.

He admires the B. & M. Railroad and its stand in substituting motor lines on its non-paying mileage. The B. & M. has also inserted the store door delivery connection with its freight system. Preliminary reports testify to the success of the newly adopted plan.

"For passenger movement," said Loree, "with the metalead surface roads now being built in such profusion, short-haul passenger business is likely to be very largely absorbed by this competitive agency. Both the railroads and the communities they serve will be wise if they actively and adequately adjust their operations to these new conditions. This distance is roughly 35 miles, so that the field of competition is generally a zone of say 30 miles in width."

California Amendment Hurts Truck Sales

Dealers and users of commercial vehicles in California are concerned particularly in two amendments to the motor vehicle laws of that state which became effective July 24th.

One of these provides for the payment of registration fees on the quarterly basis. This formerly obtained in the California law but was overlooked in the amendments passed by the legislature in 1923. The result was that if a new commercial vehicle were registered December 30th or any previous date, the full weight fee had to be paid the same as if the vehicle had been registered in the early part of the year. This proved a serious detriment to the sale of new commercial vehicles during the latter part of the year, as by waiting to buy until after the first of the year the purchaser did not have to pay two weight fees within a short time.

The new law also changes the fee paid by electric vehicles. Formerly in addi-

tion to the weight fee the electric vehicle had to pay a registration fee of \$50 instead of the \$3 registration fee paid by gasoline vehicles. This was in compensation for the gasoline tax not paid by electric vehicles. The new law waives the \$50 registration fee and charges double the weight fee paid by the gasoline vehicle.

The new law prohibits gross weight of any one axle in excess of 18,000 lbs.

Gray Plant Building Gas- Electric Buses

Preparations are being made for the production of the Tilling-Stevens Gas-Electric Drive Bus, by the American National Omnibus Corp. of New York, as a result of the reorganization of the Gray Motor Corp. of Detroit. It is understood that the Gray Motors plant will be utilized for bus production, along with the automobile activities of the company.

An official statement is expected from E. M. Hoe, president of Gray Motors, during the next week, in which the reorganization will be described in detail. Meanwhile it is learned at the New York offices of H. H. Melville, president of the American National Omnibus Corp., that a number of the buses will be on display at the American Electric Railway Association Convention at Atlantic City, October 5-9, and that deliveries will commence November 1.

Three types of buses are under production—the single deck pay-enter city type; fully enclosed double-deck city type, and super de luxe touring. They are being built under the patents of the Tilling-Stevens Motors, Ltd., of England.

B. & M. Coach Service Over Mountains

Daily motor coach service from the North Station to the White Mountains was opened by the Boston & Maine Transportation Company, with yellow coaches similar to those now in the Boston-Portland service of the company.

The new coaches, designed for this service, are equipped with 20 air-cushioned wicker chairs of ample size. Air brakes on four wheels are an added feature. The company reported that a number of the passengers leaving on the bus this morning made use of the free taxi service provided within two miles of the North Station.

Clear Driving Vision Made Compulsory

Use of compressed gas whistles on motor vehicles will be illegal in Massachusetts commencing August 1, according to a ruling by Frank A. Goodwin, registrar of motor vehicles, approved by the Department of Public Works. Effective on the same date is a requirement that "when weather conditions interfere with visibility, the windshield shall be opened or equipped with a windshield cleaner."

National Standard Parts to Hold Convention Next November

**Show to be Held in Conjunction With the
Convention. Non-Members Will be
Invited to Exhibit. Rodger &
Mee Replace Blakiston**

THE main issue before the Board of Directors of the National Standard Parts Association which met July 31st at the offices of the association, 310 Hofman Building, Detroit, Michigan, was the second annual convention to be held next November. Meetings of the Finance, Membership and Merchandising Committees were held at the same time.

It was definitely decided by the board to hold a show in connection with the second annual convention of the association. The date of the convention was set to be November 5-7 inclusive and will be staged in Chicago. The show will be open to non-members, manufacturers and jobbers, by special invitation.

Complete charge for the arrangement of the show has been placed in the hands of a show committee, the personnel of which is as follows: President, A. T. Haugh, Chairman, King Quality Products, Inc., Buffalo, New York. **Manufacturers:** Chas. W. Moffet, Warren Gear Products Co., Warren, Pa.; D. W. Rodger, Federal-Mogul Corp., Detroit, Mich. **Jobbers:** C. J. Peterson, P-D Auto Parts, Inc., Meridan, Conn.; W. T. Mills, Auto Parts Co., St. Louis, Mo.

The various other committees are as follows: **Publicity:** T. R. Walton, Chairman, James Motor Valve Co., Detroit, Mich. **Entertainment:** J. G. Winterfeldt, Chairman, Wel-Ever Chicago Sales Co., Chicago; Secretary, Fraser. **Sargent-at-Arms:** Garland Ames, Timing Gears Corp., Chicago. **Invitation and Attendance:** D. W. Rodger, Chairman, Federal-Mogul Corp., Detroit; Secretary, Fraser.

Further details as to new developments will be provided later.

A constitutional provision, which prevents the holding of office by an individual who ceases to represent a firm which is a member of the association, required the resignation of T. B. Blakiston from the board and from the chairmanship of the merchandising committee. Mr. Blakiston recently severed his connection with the American Hammered Piston Ring Company. In his place D. W. Rodger, secretary of the Federal Mogul Corp., has been appointed as a member of the board. Mr. Sim T. Mee, president of the Mee Oakes Company, has been appointed chairman of the Merchandising and Standardization Committee.

Spicer Takes Over Snead

Arrangements have been completed whereby the well known Snead Cushion Drive, which has heretofore been manufactured by Snead & Company of Jersey City, will be manufactured by the Spicer Manufacturing Corporation of South Plainfield, New Jersey.

New Truck Record for First Half of 1925

Total Automotive Production for This Period 5.8 Per Cent Higher Than the Corresponding Period in 1924

The six months period ending June 30th, marks a new record for the automobile industry. A total production of 2,173,360 cars and trucks during the first six months of 1925 represents a total increase of 5.8 per cent over the corresponding period a year ago and 5 per cent ahead of the first half of 1923.

Truck builders have had even greater success than passenger car makers and their outlook is growing brighter. Where truck production has previously averaged only 10 per cent or less of the total, it will reach 12 per cent or higher at the present rate of production, at the end of the year. Builders, it appears, have placed special emphasis on trucks of the two ton type. The bus business has also taken a great forward step and the recent merger of the Yellow Coach interests with General Motors is expected to still further boost bus production.

In view of the increasing popularity of bus transportation these past two years, even the most sanguinary expert can not foretell to what heights truck production figures will reach. If truck production continues to accelerate at the rate of the last few months, the relation of truck production figures will be entirely out of proportion to the passenger car production rate of the past.

Although there is no disposition to anticipate production for the next six months, a good summer and fall business is looked for.

June production of trucks as announced by the Department of Commerce, was 37,890, of which 36,096 were made in the United States, and 1794 in Canada. During the first six months of this year, 226,059 trucks were produced in the United States and Canada, as compared with 202,424 trucks in the first half of 1924. These figures are based on data received from 130 exclusive truck makers and 18 companies making both trucks and passenger cars.

July production is not expected to equal that of June in view of inventories, although there is no definite indication of slackening sales. The demand remains firm and many companies continue to

operate at capacity. Financial statement shows an extremely healthy condition.

Reports received from various companies, concerning production and financial conditions, presage healthy business throughout the remainder of the year.

Passenger and commercial car sales of General Motors during June exceeded the June figures of 1924 by 10,557.

Dodge Brothers established a new record for the first half of 1925 with new sales amounting to \$117,045,569. The net earnings after depreciation, but before deducting debenture interest and Federal income tax, were \$16,487,891.

At the rate now being maintained, the total Chevrolet output for 1924, including

HOW TO REACH THE USER

No scientist would consider "Judge" as an authority on science, however much he might enjoy its humor.

No engineer would be influenced by engineering discussions in the newspaper.

No automobile owner read trade news for consumer information.

No automotive dealer examines general media for automotive news.

Every man to his trade and every trade to its publications.

Reaching the trade through the trade press is reaching the user through his authority.

August 20th, will exceed that for the entire year of 1924, according to R. H. Grant, general sales manager.

The period around June 30th, marks the greatest production of Willys-Overland, Inc., in the history of this company, was the statement made by president John N. Willys, in commenting on the phenomenal production record established by this company during the first half of 1925.

Sales of Ford one-ton trucks and Fords for the first twenty days of July were 30 and 43 per cent greater than for the same period of a year ago. The sale of one-ton trucks amounted to 12,168 during this period, an increase of 3650.

In brief, a survey of the industry shows that the majority of the manufacturers are generally optimistic and are making plans to accommodate better business demands.

Trade Association Statistics Not Unlawful

Supreme Court Decrees That Violation of Federal Anti-Trust is Not Engendered by Gathering Statistics

Development and proper use of business statistics by trade associations, along the lines laid down by the recent decisions of the United States Supreme Court, is strongly urged by the Department of Manufacture of the Chamber of Commerce of the United States in a bulletin just made public.

The bulletin starts out by saying that "for years trade associations have been faced with doubts about statistical activities in which they could lawfully engage. The members of many associations had come to fear that statistics of any kind were, in the opinion of prosecuting officials, inherently wrongful, when they related to economic activity, although in other spheres statistics were held in esteem.

In this situation the Supreme Court itself has granted relief. On June 1st, it handed down its opinion in two cases brought by the Department of Justice against trade associations, holding that the statistical activities of these associations were lawful. Thus, these opinions serve to indicate for all trade associations that there is no violation of the federal anti-trust laws if they gather and distribute the essential business facts which the Supreme Court described.

With the clearer understanding of this liberty under the law, there is no bar to the development and proper use of business statistics. This clearing of atmosphere should mark the passing of guessing as to the facts concerning commodity production and distribution provided there is a willingness, at source, to supply the information. It is in the hands of each member of an industry to make possible complete and accurate figures for his line by his own contribution.

Trade associations will undoubtedly appreciate the opportunity of rendering to their constituency invaluable service by providing means for the gathering and reporting of statistics.

Campbell to Address Motor Truck Industries, Inc.

The next meeting of Motor Truck Industries, Inc., will be held at the plant of the Clark Equipment Co., at Buchanan, Mich., on September 16th. H. Colin Campbell, Manager, Advertising and Publications Bureau of the Portland Cement Association, Chicago, will be the principal speaker.

This meeting will be one of the most important to be held by this association thus far. The standardization program on which the various committees have been working is now shaping itself into concrete form. The Models and Sizes Committee, the Rating Committee and the Parts Committee all will have their reports ready to submit at the general meeting, September 16th.

U. S. Department of Commerce Production Figures
(Number of Machines)

	Passenger Cars			Trucks		
	1923	1924	1925	1923	1924	1925
January	228,872	293,824	212,909	20,569	30,741	28,099
February	260,336	343,460	252,785	23,352	32,910	34,334
March	327,059	357,045	332,108	36,737	36,444	45,012
April	351,649	346,405	391,301	39,759	37,948	47,664
May	358,685	286,324	382,714	45,829	35,314	43,303
June	344,026	225,079	364,806	42,568	29,067	37,890
July	303,544	244,544	.....	31,830	26,391	.....
August	318,888	255,232	.....	32,311	28,647	.....
September	302,352	263,528	.....	29,721	31,960	.....
October	338,485	260,881	.....	31,612	32,475	.....
November	288,813	204,343	.....	29,255	27,905	.....
December	279,864	182,099	.....	28,990	27,542	.....
Total	3,702,569	3,262,764	.....	392,533	377,344	.....

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

Those Chassis Which Are Sold and Recommended for Passenger Transportation Are Designated in the Following Table by Reference Sign (S) in Front of the Name

For Specially Designed Motor Bus Chassis See Pages 42 and 43 See Table for Replacement Data. Truck Frame Dimensions Are Included in Same Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

For full name and address of manufacturer and information regarding complete line see page 51

Trade Name and Model	General			Engine					Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.) (stripped)		
	Standard Wheelbase (Inches)	Tire Size (Inches)		Bore and Stroke (Inches)	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)	Carburetor (Make)		Fuel System	Ignition System (Make)	Generator and Starter (Make)	Type	Make and Model	Location							No. of Forward Speeds	Universals (Make)	Type	Total Reduction in High	Total Reduction in Low	Brakes, Location
1000 Pounds																									
Chevrolet Sup. Com. Cab	425	30x3 1/2	30x3 1/2	3 1/2x4	21.7	H	PS	Non	Har	Car	V	Rem	Rem	P	Own Sup	U	3	Own	Own	S	3.81	12.7	A	Det	1500
Overland 91	395	30x3 1/2	30x3 1/2	3 1/2x4	19.6	L	PC	Non	McC	Til	G	A-L	A-L	P	Own 91	U	3	Own	Own	B	4.50	17.6	A	Det	1472
1500 Pounds																									
Dodge Brothers	705	32x4 1/2	32x4 1/2	3 1/2x4 1/2	24.0	L	SP	Non	McC	Ste	V	N-E	N-E	D	Own	U	3	Own	Own	S	4.54	18.9	A	Det	1982
Larabee A1	133	29x4 1/2	29x4 1/2	3 1/2x4 1/2	23.4	L	SP	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	W	5.10	20.2	A	Det	2730
Rainier R-31	1070	32x5 1/2	32x5 1/2	3 1/2x5 1/2	22.5	L	SP	Non	Har	Zen	V	Eis	Eis	D	Own 15	U	4	Own	Own	W	6.75	22.5	A	Det	2500
White 16	2150	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	SP	Non	Har	Zen	V	Eis	Eis	D	Own 15	U	4	Own	Own	W	6.75	22.5	A	Det	3225
White 15-45	2050	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Eis	Eis	D	Own 15	U	4	Own	Own	W	5.36	26.7	A	Det	3375
Yellow Cab Mod T3	1295	29x4 1/2	29x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	D	Own 30Y	U	3	Own	Own	B	4.90	16.3	B	Det	2500
1 Ton																									
Acme Flyer	130	30x5 1/2	30x5 1/2	4 1/2x4 1/2	28.9	L	FP	Non	Per	Zen	V	A-L	A-L	P	Own	U	3	Own	Own	S	5.10	24.4	A	Det	3000
Autocar F	97	34x4 1/2	34x4 1/2	4 1/2x4 1/2	18.1	L	SP	Non	Per	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	R	8.30	33.2	A	Det	3000
Autocar G	120	34x4 1/2	34x4 1/2	4 1/2x4 1/2	18.1	L	PC	Non	Chi	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	R	8.30	33.2	A	Det	3000
Available L-1	133	33x5 1/2	33x5 1/2	4 1/2x5 1/2	25.6	L	PC	Non	Chi	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	B	5.6	23.4	A	Det	3100
Bessemer G	1550	35x5 1/2	35x5 1/2	3 1/2x5 1/2	19.6	L	FP	Non	Stn	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	I	7.00	28.0	A	Det	3000
Bethlehem KN	1695	35x5 1/2	35x5 1/2	3 1/2x5 1/2	19.6	L	FP	Non	Stn	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	I	7.00	28.0	A	Det	3000
Beta J-3	1850	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.3	L	PC	Non	Chi	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	B	6.86	27.4	A	Det	3150
Biederman	138	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.3	L	PC	Non	Chi	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	B	6.86	27.4	A	Det	3150
Casco A	1700	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.3	L	PC	Non	Chi	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	B	6.86	27.4	A	Det	3150
Chevrolet Sup.	550	31x4	31x4	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Diamond T75	2490	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Duplex G	132	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Federal Knight	132	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Garford 15	1690	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Gary Express	131	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Goetz 20 B	1085	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Graham Bros. BB	133	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Gramm-Kincaid 23N	1550	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Hug TA 1	1400	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Indiana 11	129	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Intero 1	129	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Kenworth OS	2150	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
King-King-Zettler	2050	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Lehigh	1855	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Lehigh GP-1	2600	34x5 1/2	34x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Macmillan	132	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Manitowish	1875	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Moreland R-R	2240	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Moreland RC	1695	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Nash A-76	1775	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Noble A-76	1675	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
O. K. O	750	30x3 1/2	30x3 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Ogden A2	125	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Penn	2150	33x5 1/2	33x5 1/2	3 1/2x5 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Rainier R-29	122	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Ruggles 16	122	32x4 1/2	32x4 1/2	3 1/2x4 1/2	22.5	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200
Sandow GA	130	32x6	32x6	4 x5	25.6	L	PC	Non	Har	Zen	V	Bos	Bos	B-L	Own	U	3	Own	Own	S	5.5	27.4	A	Det	3200

For full name and address of manufacturer and information regarding complete line see page 51

Trade Name and Model	General			Engine					Electrical System		Clutch		Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Sprockets (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.)					
	Tire Size		Standard Wheelbase (inches)	Bore and Stroke (inches)	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)	Fuel System		Ignition System		Generator and Starter (Make)	Type	Make and Model	Location	No. of Forward Speeds							Universals (Make)		Total Reduction in High	Total Reduction in Low	Brakes, Location
	Front (inches)	Rear (inches)								Carburetor (Make)	Fuel Feed (Make)	Ignition System (Make)	Universal (Make)																
1 Ton—con'd																													
Sanford W-612	151	30x5	30x5	3 3/4 x 4 1/2	27.3	L	PC	Non	R-T	Str	G	Dyn	Ful	D	Ful GU-7	U	U	3	Spi	Own F	Del	Ros	Van	Gdy	2960				
Schacht	132	30x5	30x5	4 x 5	25.6	H	PC	Non	Own	Zen	V	Rem	Ful	D	Ful B-1	U	U	3	Blo	Wis 60D	She	Ros	Smi	Fir	3755				
Servic 25F	132	30x5	30x5	3 3/4 x 5 1/4	25.6	L	PC	Non	Own	Zen	V	Rem	Ful	D	Ful B-1	U	U	3	M-E	Tim 1500	She	Ros	Smi	Fir	3675				
Sterling DW-8	142	32x6	32x6	4 x 5	25.6	L	PC	Non	Own	Zen	V	Rem	Ful	D	Ful B-1	U	U	3	Spi	Tim 6258	Mat	Ros	Ind	Ind	4200				
Stewart 16	1195	32x4 1/2	34x4 1/2	3 3/4 x 5	19.6	L	PC	Non	Per	Zen	G	A-L	Rem	D	Ful SU-1	U	U	3	Spi	Col B-365	Det	Ros	Ind	Ind	2700				
Unit 15	125	32x4 1/2	32x4 1/2	3 3/4 x 5	22.5	L	PC	Non	G&O	Zen	G	A-L	Rem	D	Ful SU-1	U	U	3	Spi	Col 30000	Det	Ros	Ind	Ind	3300				
Wachusett S	2400	34x5	34x5	3 3/4 x 4 1/2	27.3	L	PC	Non	Lon	Zen	V	West	Bos	B-L	B-L 30	U	U	3	Har	Tim 5511	Sev	Ros	Smi	Fir	3600				
Wilcox AA	1900	33x5 1/2	33x5 1/2	3 3/4 x 5 1/2	22.5	L	PS	Non	Dup	Zen	V	Bos	N-E	B-L	B-L 30	U	U	3	Spi	Rus 36000-B	She	Ros	Ind	Ind	3130				
Yellow Cab T-1	1450	33x5	33x5	3 3/4 x 5	22.5	L	PS	Non	Lon	Zen	V	Bos	N-E	B-L	B-L 35	U	U	3	Spi	Tim 5516	Mar	Ros	Ind	Ind	3210				
1 1/4 Ton																													
Autocar F	97	34x4 1/2	34x4 1/2	4 3/4 x 4 1/2	18.1	L	SP	Non	Own	Str	G	L-N	Own	P	Own F	A	A	3	Spi	Own F	Del	Ros	Hoo	Hoo	3900				
Autocar G	120	34x4 1/2	34x4 1/2	4 3/4 x 4 1/2	18.1	L	SP	Non	Own	Str	G	L-N	Own	P	Own F	A	A	3	Spi	Own F	Del	Ros	Hoo	Hoo	3900				
Biederman	154	34x5	34x5	3 3/4 x 4 1/2	27.3	H	PC	Non	G&O	Zen	V	Del	B-L	D	B-L 31	U	U	3	Spi	Tim 52024	She	Ros	Ind	Ind	3125				
Brockway E	135	33x5	33x5	4 x 5	25.6	H	PC	Non	G&O	Zen	V	Del	B-L	D	B-L 31	U	U	3	Spi	Col 53000	She	Ros	Ind	Ind	3450				
Brockway E7	153	32x6	32x6	3 3/4 x 5	27.3	H	PC	Non	Own	Zen	V	Bos	B-L	D	B-L 31	U	U	3	M-E	Col 5405	Per	Ros	Ind	Ind	3450				
Clinton 20B	1980	30x5	30x5	3 3/4 x 5 1/2	22.5	L	PC	Non	Own	Zen	V	Bos	B-L	D	B-L 31	U	U	3	M-E	Tim 1250	Per	Ros	Smi	Fir	3250				
Clinton 10A	2071	30x5	30x5	3 3/4 x 5 1/2	22.5	L	PC	Non	Own	Zen	V	Bos	B-L	D	B-L 31	U	U	3	M-E	Tim 1250	Per	Ros	Smi	Fir	3450				
Clydesdale 10A	2071	30x5	30x5	3 3/4 x 5 1/2	22.5	L	PC	Non	Own	Zen	V	Bos	B-L	D	B-L 31	U	U	3	M-E	Tim 1250	Per	Ros	Smi	Fir	3450				
Corbett 25	154	34x5	34x5	4 1/4 x 4 1/2	28.6	L	PC	Non	G&O	Str	V	Bos	Cov	JUC	Cov C	U	U	3	Spi	She E-500	She	Ros	Smi	Fir	4300				
Diamond T 04	132	36x4	36x4	4 1/4 x 5 1/2	25.6	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Engle 101	1875	34x5	34x5	3 3/4 x 5 1/2	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Federal R-3	1675	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Gramm-Bernstein 10	129	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Gramm-Knecht 23N	133	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Gramm-Knecht 26N	133	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Guider B	1650	32x5	32x5	3 3/4 x 4 1/2	27.3	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Guider B-6	1750	32x5	32x5	3 3/4 x 4 1/2	27.3	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Hahn B2	1800	34x5	34x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Lamarre-Deyo X-2	1810	34x5	34x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Master 11	132	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Memphis HT	130	34x3 1/2	34x3 1/2	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Norway Rocket	1390	32x4 1/2	32x4 1/2	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Patrol 17K	129	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Reo F	1185	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Republic 75	128	34x5	34x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Ruggles 20R	144	30x5	30x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Selden Facemaker 24	144	30x5	30x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Selden Facemaker 26	144	30x5	30x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Standard 75	131	34x4 1/2	34x4 1/2	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Stoughton C	138	34x5	34x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
S. U. United	131	30x5	30x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
Victor 25	1500	33x5	33x5	3 3/4 x 5	22.5	L	PC	Non	Own	Zen	V	Bos	Cov	JUC	Cov C	U	U	3	M-E	Tim 1250	Cha	Ros	Sid	Fir	2800				
1 1/2 Ton																													
Ame 20L	136	34x5	34x5	3 3/4 x 4 1/2	27.3	L	PC	Non	G&O	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5	25.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	2450	34x5	34x5	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258	Det	Ros	Ind	Ind	3500				
Ame 20L	148	34x4 1/2	34x4 1/2	4 x 5 1/4	26.6	L	PC	Non	Own	Zen	V	Bos	B-L	P	B-L	U	U	3	Blo	Tim 6258									

2 Ton

For full name and address of manufacturer and information regarding complete line see page 51

Trade Name and Model	General			Engine						Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Chassis Weight (lbs.) (striped)										
	Standard Wheelbase (inches)	Tire Size & Rear (inches)		Make and Model	Bore and Stroke (inches)	N.A.C.C. Rated H.P.	Valve Arrangement		Governor (Make)	Radiator (Make)	Fuel System		Ignition System	Generator and Starter (Make)	Type	Make and Model	Location	No. of Forward Speeds						Universals (Make)	Make and Model	Type	Total Reduction in High	Total Reduction in Low	Brakes, Location				
		Front (inches)	Rear (inches)				Carburetor (Make)	Fuel Feed																									
2 Ton—Con'd	144	34x4 1/2	36x7 1/2	Bud KBU	4 3/8x5 1/2	25.6 L	L	PCC	Non	Bus Lon	Zen	V G	Eis	Bos	B-L	D	B-L 31	U	3	Spi	U-P	Cia	Tim 6462	W	7.75	7.25	A	Col 7018	She Det	Gem Ros	Van SMI	Fir	4300
	144	36x3 1/2	36x7	Con J-4	3 3/8x5 1/2	22.5 L	25.6 L	PCC	Pie	Mod	Zen	G V	Eis	Bos	Ful	D	Ful GU7	U	4	Spi	U-P	Tim W-103	Cia	W	7.25	7.25	A	Con	S.P.	Ros Ros	SM Mot	Fir	3740
	2800	34x4 1/2	36x7 1/2	Hin HAA	4 1/4x5 1/4	28.9 L	25.6 L	PCC	Non	G&O	Zen	G V	Eis	Bos	Cov	D	Cov GU7	U	4	Spi	U-P	Tim W-103	Tim W-103	W	7.75	7.25	A	She D343	Pen Ros	Ros Ros	SM Mot	Fir	4450
	160	34x4 1/2	36x7 1/2	Bud KBU	4 1/4x5 1/4	25.6 L	25.6 L	PCC	Non	Wau	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	8.31	7.75	A	She D343	Pen Ros	Ros Ros	SM Mot	Fir	4400
	2300	34x4 1/2	36x7 1/2	Bud KBU	4 1/4x5 1/4	25.6 L	25.6 L	PCC	Non	Wau	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	8.31	7.75	A	Col 7000	Cha Ros	Ros Ros	SM Mot	Fir	4300
	136	34x4 1/2	36x7 1/2	Con C-4	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Dup	McC	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	5.60	5.60	A	Tim 1460DXZ	Mat Ros	Ros Ros	SM Mot	Fir	5500
	144	36x6	40x8	Bud KBU	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Sim	McC	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Tim 1460	Det Ros	Gem Ros	SM Mot	Fir	4735
	133	32x6	32x6	Lyc C4	4 1/4x5 1/4	25.6 L	25.6 L	FP	Non	McC	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Tim 1460	Det Ros	Gem Ros	SM Mot	Fir	5300
	133	32x6	32x6	Lyc C4	4 1/4x5 1/4	25.6 L	25.6 L	FP	Non	McC	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Tim 1460	Det Ros	Gem Ros	SM Mot	Fir	5300
	2650	34x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Opt	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400
	2975	34x4 1/2	36x7 1/2	Bud KBU	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400
	2850	34x4 1/2	36x7 1/2	Con K4	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400
2175	34x4 1/2	36x7 1/2	Bud KBU	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
150	36x6	36x7	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
130	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
130	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
3100	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A	Col 5300	Mat Ros	Ros Ros	SM Mot	Fir	4400	
160	36x4 1/2	36x7 1/2	Wau W	4 1/4x5 1/4	27.2 L	25.6 L	PCC	Pha	Chi	Zen	G V	Eis	Non	Cov	D	Cov GU7	U	4	Spi	U-P	Tim 6462	Tim 6462	W	7.25	7.25	A</							

[illegible]

5 Ton

For full name and address of manufacturer and information regarding complete line see page 51

Trade Name and Model	General			Engine						Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.) (Stripped)				
	Standard Wheelbase (Inches)	Tire Size §§		Bore and Stroke (Inches)	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)	Fuel System			Generator and Starter (Make)	Type	Make and Model	Location	No. of Forward Speeds	Universals (Make)							Type	Total Reduction in High	Total Reduction in Low	
		Front (Inches)	Rear (Inches)							Carburetor (Make)	Fuel Feed							Ignition System (Make)										
5 Ton—Con'd																												
Autocar L.....	156	34x6	36x14	4 1/4 x 5 1/2	28.9	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	9.80	72.1	Del	Ros	Hoo	Non	7400				
Autocar M.....	160	34x6	36x14	4 1/4 x 5 1/2	28.9	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	9.80	72.1	Del	Ros	Hoo	Non	7400				
Available L5.....	190	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	11.3	60.6	Tut	Ros	Hoo	Non	7200				
Biederman.....	180*	36x7	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	11.3	60.6	Tut	Ros	Hoo	Non	9200				
Brooklyn T15.....	176 1/2	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.38	60.6	Tut	Ros	Hoo	Non	9800				
Brooklyn T15.....	176 1/2	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.38	60.6	Tut	Ros	Hoo	Non	9800				
Clinton 120L.M.....	5140	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	8.80	47.1	She	Ros	Hoo	Non	9400				
Clinton 120L.M.....	5250	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	8.80	47.1	She	Ros	Hoo	Non	9400				
Clydesdale 2.....	176	36x7	36x7 1/2	4 1/4 x 5 1/2	40.0	L	P	C	K.P.	Own	Zen	Bos	Ros	Own	P	Own B	A	11.0	110.8	Per	Ros	Hoo	Non	9400				
Clydesdale 2.....	176	36x7	36x7 1/2	4 1/4 x 5 1/2	40.0	L	P	C	K.P.	Own	Zen	Bos	Ros	Own	P	Own B	A	11.0	110.8	Per	Ros	Hoo	Non	9400				
Corbitt A.A.....	178	36x7	40x6 1/2	4 1/4 x 5 1/2	40.0	L	P	C	Sim	Own	Zen	Bos	Ros	Own	P	Own B	A	13.0	62.0	Per	Ros	Hoo	Non	9400				
Day-Elder L.....	170	36x6	40x6 1/2	4 1/4 x 5 1/2	40.0	L	P	C	Mon	Own	Zen	Bos	Ros	Own	P	Own B	A	11.0	62.0	Per	Ros	Hoo	Non	9400				
Day-Elder L.....	170	36x6	40x6 1/2	4 1/4 x 5 1/2	40.0	L	P	C	Mon	Own	Zen	Bos	Ros	Own	P	Own B	A	11.0	62.0	Per	Ros	Hoo	Non	9400				
Danby 210.....	170	36x6	40x6 1/2	4 1/4 x 5 1/2	40.0	L	P	C	Mon	Own	Zen	Bos	Ros	Own	P	Own B	A	11.0	62.0	Per	Ros	Hoo	Non	9400				
Diamond T S.....	180	36x6	40x6 1/2	4 1/4 x 5 1/2	40.0	L	P	C	Mon	Own	Zen	Bos	Ros	Own	P	Own B	A	11.0	62.0	Per	Ros	Hoo	Non	9400				
Dixon.....	4490	36x6	36x12	4 1/4 x 5 1/2	36.1	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Del	Ros	Hoo	Non	8500				
Dixon.....	4490	36x6	36x12	4 1/4 x 5 1/2	36.1	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Del	Ros	Hoo	Non	8500				
Federal X-2.....	4750	36x6	40x6 1/2	4 1/4 x 5 1/2	36.1	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Del	Ros	Hoo	Non	8700				
Federal X-2.....	4750	36x6	40x6 1/2	4 1/4 x 5 1/2	36.1	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Del	Ros	Hoo	Non	8700				
Garford 68D.....	167	36x6 1/2	40x12	5 x 6 1/2	40.0	L	P	C	McC	Own	Str	G	Bos	L-N	Own	P	Own B	A	8.80	56.4	Mar	Ros	Hoo	Non	9250			
Garford 68D.....	167	36x6 1/2	40x12	5 x 6 1/2	40.0	L	P	C	McC	Own	Str	G	Bos	L-N	Own	P	Own B	A	8.80	56.4	Mar	Ros	Hoo	Non	9250			
Gary B50.....	4850	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9250				
G.M.C. K-101A.....	183	36x5	40x12	4 1/4 x 5 1/2	32.4	L	PP	Own	McC	Mar	Own	Eis	Rem	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9250				
G.M.C. K-101B.....	183	36x5	40x12	4 1/4 x 5 1/2	32.4	L	PP	Own	McC	Mar	Own	Eis	Rem	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9250				
G.M.C. K-101B.....	183	36x5	40x12	4 1/4 x 5 1/2	32.4	L	PP	Own	McC	Mar	Own	Eis	Rem	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9250				
Gottfredson 100.....	169	36x6	40x6 1/2	4 1/4 x 5 1/2	36.1	L	P	C	Sim	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Det	Ros	Hoo	Non	9120			
Gottfredson 100.....	169	36x6	40x6 1/2	4 1/4 x 5 1/2	36.1	L	P	C	Sim	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Det	Ros	Hoo	Non	9120			
Gramm-Berns'n 50.....	168	36x6	40x6 1/2	4 1/4 x 5 1/2	36.1	L	P	C	Sim	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Det	Ros	Hoo	Non	9120			
Gramm-Berns'n 50.....	168	36x6	40x6 1/2	4 1/4 x 5 1/2	36.1	L	P	C	Sim	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.2	54.8	Det	Ros	Hoo	Non	9120			
Guider K-6.....	5250	36x6	40x12	5 x 6 1/2	40.0	L	P	C	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200			
Guider K-6.....	5250	36x6	40x12	5 x 6 1/2	40.0	L	P	C	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200			
Hahn M.....	4250	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Hahn M.....	4250	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Hahn M2.....	4750	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Hahn M2.....	4750	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Indiana 51.....	182	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Indiana 51.....	182	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Indiana 52.....	182	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Indiana 52.....	182	36x6	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
International 103.....	160	36x5	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
International 103.....	160	36x5	40x12	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.0	86.0	Own	Ros	Hoo	Non	9200				
Kearns TF.....	160*	36x6	36x12	4 1/4 x 5 1/2	28.9	H	SP	Own	Own	Own	Own	Ros	Rem	Own	P	Own B	A	11.0	69.9	She	Woh	Woh	Non	7380				
Kearns TF.....	160*	36x6	36x12	4 1/4 x 5 1/2	28.9	H	SP	Own	Own	Own	Own	Ros	Rem	Own	P	Own B	A	11.0	69.9	She	Woh	Woh	Non	7380				
Kenworth RS.....	5500	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	8.75	59.0	Lah	Ros	Hoo	Non	8400				
Kenworth RS.....	5500	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	8.75	59.0	Lah	Ros	Hoo	Non	8400				
King Zettler.....	4525	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	11.0	62.0	Lah	Ros	Hoo	Non	8700				
King Zettler.....	4525	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	11.0	62.0	Lah	Ros	Hoo	Non	8700				
Kissel Goliath.....	4385	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	11.0	62.0	Lah	Ros	Hoo	Non	8700				
Kissel Goliath.....	4385	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	11.0	62.0	Lah	Ros	Hoo	Non	8700				
Kleber.....	5300	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.3	57.8	Mat	Ros	Hoo	Non	10400				
Kleber.....	5300	36x6	40x14	5 x 6 1/2	33.7	L	SP	Pha	Own	Str	G	Bos	L-N	Own	P	Own B	A	10.3	57.8	Mat	Ros	Hoo	Non	10400				
Krebs 84.....	183	36x6 1/2	40x12	4 1/4 x 5 1/2	36.1																							

$\frac{d}{dt} \left(\frac{1}{r^2} \right) = -\frac{2}{r^3} \frac{dr}{dt}$

DETAILED MOTOR

This Table Comprises Motor Bus Chassis Which Are
For Other Chassis Which Are Recommended and
in the "COMMERCIAL"

Line Number	MAKE AND MODEL	GENERAL							ENGINE							ELECTRICAL SYSTEM							NORMAL SPEED		
		Seating Capacity	Chassis Price	Weights			Tread	Wheelbase	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Rated Horse Power N.A.C.C.	Valve Arrangement	Oiling System	Radiator Make	Fuel System		Ignition System Make	Generator and Starter Make	Battery		Voltage and Amp. Hr. Cap.	High M. P. H.	Low M. P. H.
				Chassis Only	Chassis with Body	Recommended Body Allowance											Carburetor Make	Fuel Feed			Make	Model			
1	Ace C.....	30	4850	6500	11500	5000	204	70	80 1/2	Cont 7T	6-4 1/2 x 5 1/2	40.8	I	PC	Own	Zen	V	Eis	Rem	USL	3HVX8X	6-110	35	6.0	
2	Acme 116.....	16	4910	8460	180	58	58	58	58	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Per	Zen	V	Eis	Del	Wil	SJRT-6	6-153	45	...	
3	Acme 118.....	20	5110	9280	205	58	58	58	58	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Pen	Zen	V	Eis	Del	Wil	SJRT-6	6-153	45	...	
4	Bridgeport 45.....	30	3850	5500	178	60	72	60	72	Buda EBU	4-4 1/2 x 5 1/2	28.9	L	PC	...	Zen	V	Eis	Bos	Wil	...	6-120	42	10.0	
5	Brockway EB.....	18	3850	6350	2500	153	58	58	58	Wisc SU	4-4 x 5	25.6	I	FP	G&O	Zen	V	Eis	L-N	Exi	3XE15-1	12-220	45	11.0	
6	Brockway EB4.....	18	4000	6400	2500	153	58	58	58	Wisc 6Y	6-3 3/4 x 5	...	I	FP	G&O	Zen	V	Eis	L-N	Exi	3XE15-1	12-220	45	8.5	
7	Brockway H.....	22	4975	7975	3000	164	60	65 1/2	71	Cont 6B	6-3 3/4 x 5	33.7	L	FP	G&O	Zen	V	Eis	L-N	Exi	3XE15-1	12-220	35	6.5	
8	Brockway J.....	25	6585	10585	4000	185	66 1/2	71	71	Cont 6B	6-3 3/4 x 5	33.7	L	FP	G&O	Zen	V	Eis	L-N	Exi	3XE15-1	12-220	35	6.5	
9	Clinton 65B.....	30	4075	5925	8700	2725	184	58 1/2	76 3/4	Buda EBU	4-4 1/2 x 5 1/2	28.9	L	PC	Own	Zen	V	Bos	Bos	Pol	615KPN	6-180	30	3.0	
10	Clinton 65BS.....	35	4800	6600	9600	3000	220	68	76 3/4	Buda YBU	4-4 1/2 x 6	32	4	L	PC	Own	Zen	V	Bos	Bos	Pol	615KPN	6-180	35	3.0
11	Commerce 60.....	25	5000	...	3000	229	68	75	75	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Lon	Zen	V	Bos	Bos	Wil	SJRT30	6-153	35	6.0	
12	Commerce 65.....	29	6000	...	3500	242	68	75	75	Cont 14H	6-4 1/2 x 5 3/4	48.6	L	PC	Lon	Zen	V	Bos	L-N	Wil	SJRT 30	12-153	35	5.0	
13	Concord.....	25	...	...	196	58 1/2	58 1/2	58 1/2	58 1/2	Buda Bus	6-4 x 5 1/2	38.0	L	PC	Bus	Zen	V	Bos	L-N	Exi	6LXRE13-3	12-240	42	6.5
14	Day-Elder 20.....	...	5200	7700	2500	168	56	58	58	Buda KBU	4-4 x 5 1/2	25.6	L	PC	Bus	Zen	V	Eis	Bos	Wil	SJRT6	6-153	35	10.0	
15	Day-Elder 25.....	...	5600	8600	3000	180	58	58 1/2	58 1/2	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Bus	Zen	V	Eis	Bos	Wil	SJRT6	6-153	35	7.0	
16	Day-Elder 30.....	...	7000	11000	4000	196	68 1/2	74	74	Buda BUS	6-4 x 5 1/2	38.4	L	PC	Bus	Zen	V	Eis	L-N	Wil	SJRT6	12-153	35	7.0	
17	Denby 36.....	30	7000	10500	3500	216	74	74	74	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Lon	Zen	V	RBo	RBo	Wil	SJRT 30	12-153	30	...	
18	Dorris.....	25	5700	10300	...	224	72 1/4	68	72 1/4	Own	6-4 x 5	38.4	I	PC	Mod	Str	V	Bos	N-E	Wil	SJRT30	12-135	40	5.0	
19	Duplex FB.....	23	5500	...	3000	181	58	72	72	BudaEBUI	4-4 1/2 x 5 1/2	28.9	L	PC	Mod	Zen	V	Eis	Wes	Pol	...	6-220	35	10.0	
20	Fageol Parlor Car.....	22	6000	6770	10550	...	72	78 1/4	78 1/4	Has 75	6-4 1/2 x 5 1/2	43.6	I	PC	Lon	Zen	V	Del	Del	Exi	6LXRE13-3	12-240	35	7.0	
21	Fageol Street Car.....	29	5300	6480	10000	...	218	70	78 1/4	Has 50	4-4 1/2 x 5 1/2	28.9	I	PC	Lon	Zen	V	Del	Del	Exi	6LXRE13-3	12-240	35	7.0	
22	Federal.....	25	5450	...	2500	190	60	60	60	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Mod	Zen	V	Eis	Rem	Exi	3LXRE	6-185	35	6.0	
23	Fifth Ave. J.....	25	5850	8530	2780	172	67 3/4	71 1/2	71 1/2	Yell EZ	4-4 x 6	25.6	X	PC	Own	Zen	V	Eis	N-E	Wil	STRN27	12-90	30	7.5	
24	Fifth Ave. L.....	55	6850	12040	5190	174 1/4	67	77 1/2	77 1/2	Yell EZ	4-4 x 6	25.6	X	PC	Own	Zen	V	Eis	N-E	Wil	STRN27	12-90	27	5.0	
25	Garford 51D.....	29	6500	9900	3400	187	68	80	80	Buda Bus	6-4 x 5 1/2	38.0	L	PC	Own	Str	V	Spl	Rem	Wil	STRN6	6-190	35	5.0	
26	Garford KB.....	17	3600	6000	2400	180	58	59 1/2	59 1/2	Wis Y	6-3 3/4 x 5	27.3	I	FP	Lon	Zen	V	A-L	A-L	Wil	SJRT-5	6-135	35	7.3	
27	Garford CB.....	29	6900	11300	4400	220	72	76	76	Wis Z	6-4 1/2 x 5	48.6	I	FP	Lon	Zen	V	Spl	L-N	Wil	SJRT-30	12-153	57	11.0	
28	Gary 45B.....	40	5500	...	...	220	68	72	72	Bud GL6	6-4 1/2 x 6	48.6	...	...	Chi	Str	V	Rem	Rem	...	...	...	...	...
29	Graham Bros. YB.....	24	1600	3700	5700	2000	158	56	56	Dodge	4-3 1/2 x 4 1/2	24.0	L	PS	McC	Ste	V	N-E	N-E	Exi	6LXCI1-1	12-90	30	4.0	
30	Grass Premier ZR3.....	22	5200	5150	8600	3500	200	70	76 1/2	Wau	6-4 1/2 x 5 1/2	45.9	L	PC	Chi	Str	V	Eis	Ros	Exi	...	6	40	2.0	
31	Guilider 20.....	17	2500	3650	...	152	56	56	56	Cont 8R	6-3 3/4 x 4 1/2	27.3	...	...	G&O	Zen	V	...	Bos	...	...	...	...	...
32	Guilider 36.....	25	4850	6000	...	204	68	72	72	Buda Bus	6-4 x 5 1/2	38.0	...	...	G&O	Zen	V	...	L-N	...	...	...	...	...
33	International SL.....	16	4500	5200	7780	2400	202	64 1/2	66	Lyc Spec	4-3 1/2 x 5	19.6	L	PC	...	Own	G	Con	A-L	Pol	...	6-100	35	...	
34	Kissel.....	18	4500	5200	7780	2400	202	64 1/2	66	Own 4-36	4-4 1/2 x 5 1/2	28.9	L	PC	Spa	Str	V	Bos	Rem	Wil	SJRT6	6-153	40	...	
35	Larrabee X-2, L-10.....	15	1965	3450	4850	1400	155	56	56	Cont 8R	6-3 3/4 x 4 1/2	27.3	L	PC	Fed	Zen	V	Bos	Bos	Exi	3XE15	6-80	40	8.0	
36	Larrabee XH3.....	21	3850	4500	7670	3000	186	60	65	Cont 6B	6-3 3/4 x 5	33.7	L	PC	Fed	Zen	V	Bos	Bos	Exi	36XRE25	6-240	40	7.0	
37	Maccar.....	...	7500	12000	4500	228 1/4	73	77	77	Buda Bus	6-4 x 5 1/2	38.4	L	PC	Bus	Str	V	DJ	Bos	Pol	615KPK	6-240	40	7.5	
38	Mack AB.....	25	4650	...	...	196	68	63 3/4	63 3/4	Own AB	4-4 1/2 x 5	28.9	L	PC	Own	Str	V	Spl	N-E	Exi	6LXRE13	12-120	41	10.0
39	Mack AB.....	29	4750	...	...	225	68	63 3/4	63 3/4	Own AB	4-4 1/2 x 5	28.9	L	PC	Own	Str	V	Spl	N-E	Exi	6LXRE13	12-120	41	10.0
40	Mack AB.....	29	4750	...	...	230	68	63 3/4	63 3/4	Own AB	4-4 1/2 x 5	28.9	L	PC	Own	Str	V	Spl	N-E	Exi	6LXRE13	12-120	41	10.0
41	Mason Road King C.....	...	2150	3900	7430	3500	168	56	56	Her OX	4-4 x 5	25.6	L	PC	Fed	Zen	V	A-L	A-L	USL	3HVX8X	6-166	35	7.5	
42	Master.....	30	...	6000	9500	3500	194	59	59	Buda EBU	4-4 1/2 x 5 1/2	28.9	L	PC	Chi	Zen	V	Eis	Wes	Wil	...	12-	25	5.0	
43	Menominee T.....	16	4290	7500	3200	175	60	58	58	Wisc Y	6-3 3/4 x 5	27.3	L	PC	Own	Zen	V	Rem	Rem	Wil	SJRT6	6-153	38	...	
44	Menominee DB.....	25	6020	9100	3200	186	68	73	73	Wisc TAU	4-4 x 6	25.6	L	PC	Own	Zen	V	Eis	Bos	Wil	SJRT6	6-153	32	6.0	
45	Moreland RC.....	16	2280	3850	5850	2000	180	56	57	Herc OBX	4-4 x 5	25.6	L	PC	Own	Zen	V	Spl	A-L	Hob	6HTXR15A	6-140	25	...	
46	Moreland EC.....	20	3780	4590	7590	3000	178	61	58	Cont K4	4-4 1/2 x 5 1/2	27.3	L	FP	Own	Sch	V	Spl	Spl	Hob	6HTXR15A	6-140	25	...	
47	Moreland AC.....	25	4700	5660	9160	3500	187	68	69	Cont L4	4-4 1/2 x 5 1/2	32.5	L	FP	Own	Sch	V	Spl	Spl	Hob	6HTXR15A	6-140	25	...	
48	Pierce-Arrow Z.....	25	4600	6100	9100	3000	196	68	75 1/2	Own	6-4 x 5 1/2	38.0	T	FP	Own	Own	P	Del	Del	Wil	SJRT30	12-132	50	3.0	
49	Pierce-Arrow Z.....	30	4750	6200	9700	3500	220	68	75 1/2	Own	6-4 x 5 1/2	38.0	T	FP	Own	Own	P	Del	Del	Wil	SJRT30	12-132	50	3.0	
50	Reo W Sedan.....	16	2350	3700	7250	3500	176	56	57 1/2	Own W	6-3 3/4 x 5	24.3	F	PS	Own	Sch	V	N-E	N-E	Wil	SJRT6	6-153	37	10.0	
51	Reo W Street Car.....	21	2525	3860	7360	3500	176	56	57 1/2	Own W	6-3 3/4 x 5	24.3	F	PS	Own	Sch	V	N-E	N-E	Wil	SJRT6	6-153	37	10.0	
52	Republic 81.....	15	...	...	2000	185	60	58	58	Lyc	4-4 x 5	25.6	L	PC	Own	Str	V	Bos	Bos	USL	...	6-156	35	...

BUS SPECIFICATIONS

Designed and Sold Exclusively for Passenger Transportation

Adaptable for Bus Use, See Models Having Sign (S)
CAR SPECIFICATIONS"

Line Number	TRANSMISSION				REAR AXLE							Front Axle Make and Model	Steering Gear Make	TIRES AND WHEELS				DIMENSIONS (In.)				
	Clutch	Gearset	Universal	Number of Forward Speeds	Make	Make and Model	Final Drive	Type	Gear Ratio		Service Brake Type and Location			Tires (In.)		Wheels—Make	Rims—Make	Floor Height	Turning Radius	Overall		Clearance from Ground
									Total in High	Total in Low				Front	Rear					Length	Width	
1	D. B. L.	B. L. 60	U	4	U-M	Tim 6516	Wo	F 1/2	5.4	26.6	I-R	Tim 1550	Ros	36x6	38x7	Day	Fir	27 1/2	34	316	90	9 1/4
2	D. B. L.	B. L. 51	U	4	Blo	Cla B6000	Wo	F 1/2	5.5	26.4	I-R	Shu	Ros	34x7*	34x7*	Smi	Fir	21 1/2	259	83 3/4	9 1/4	9 1/4
3	D. B. L.	B. L. 51	U	4	Blo	Cla B6000	Wo	F 1/2	5.5	26.4	I-R	Shu	Ros	34x7*	34x7*	Smi	Fir	21 1/2	276	83 3/4	9 1/4	9 1/4
4	D. B. L.	B. L. 50	U	4	Spi	Tim 6560	Wo	F 1/2	6.7	36.1	I-R	She Spec	Ros	36x6*	36x6*	Bud	Fir	31 1/2	283 1/2	243	64	9
5	D. B. L.	B. L. 30	U	3	Spi	Col 53000	B	F 3/4	5.1	21.8	E-R	Col 5200	Gem	32x6	32x6	Van	Fir	28 1/2	28	243	64	9
6	D. B. L.	B. L. 30	U	3	Spi	Col 53000	B	F 3/4	5.1	21.8	E-R	Col 5200	Gem	32x6	32x6	Van	Fir	28 1/2	28	243	64	9
7	D. B. L.	B. L. 55	U	4	Spi	Huck 25	B	F 1/2	6.6	36.1	I-R	Shu 5550	Ros	32x6	32x6	Bud	Fir	27 1/2	30	256	74	8 1/2
8	D. B. L.	B. L. 55	U	4	Spi	Tim 6516	Wo	F 1/2	7.7	36.1	I-R	Shu 610B	Ros	36x6	36x6*	Bud	Fir	27 1/2	32	295 1/4	90	7 1/2
9	D. B. L.	B. L. 55	S	4	M-E	Tim 3566	Wo	F 1/2	6.5	34.8	I-R	Tim 1544B	Ros	36x6*	36x6*	Bud	Fir	30	37	270	75 1/2	9 1/4
10	D. B. L.	B. L. 55	S	4	M-E	Tim 6516	Wo	F 1/2	6.7	36.1	I-R	Tim 1550	Ros	36x6	36x6*	Bud	Fir	26	40	286	90	7 1/2
11	B. L. 70	B. L. 60H	A	4	Blo	Tim 6516	Wo	F 1/2	6.8	27.2	I-R	Tim 1550	Ros	36x6	36x6*	Bud	Fir	20 1/2	330	88 1/2	7	7
12	B. L. 70	B. L. 60H	A	4	Blo	Tim 6516	Wo	F 1/2	5.4	21.6	I-R	Tim 1550	Ros	36x6	36x6*	Bud	Fir	20 1/2	343	88 1/2	7	7
13	D. B. L.	B. L. 51	A	4	Spi	Tim 6566	Wo	F 1/2	6.0	3.48	I-R	Tim 1544	Ros	36x6	36x6*	Bud	Fir	32	30	260	75 1/2	11
14	D. B. L.	B. L. 35	U	3	Spi	Tim 6462	Wo	F 1/2	6.5	21.8	I-R	Tim 1526	Gem	36x6*	38x7*	Van	Fir	32	30	246 1/2	70 1/2	12
15	D. B. L.	B. L. 51	U	4	Spi	Tim 6566	Wo	F 1/2	6.7	36.1	I-R	Tim 1544	Gem	36x6*	40x8*	Bud	Fir	32	30	260	75 1/2	10 1/2
16	D. B. L.	B. L. 51	U	4	Spi	Huck 85	R	F 1/2	5.7	30.6	I-R	She D 445	Gem	36x6*	36x6*	Bud	Fir	25	27	293	90	8
17	D. Ful	Ful GU14	U	4	Blo	Cla 3D	Ig	F D	7.0	33.6	I-R	Shu 610B	Ros	36x6*	36x6*	Bud	Fir	21	34	294	91	8
18	D. Own	B. L. 55	U	4	Spi	Wis	R	F 1/2	4.8	32.1	I-R	Tim 1560	Ros	34x7*	36x8*	Bud	Fir	24	36	309	90	8
19	D. B. L.	B. L. 55	U	4	Pet	Vu 14	Wo	F 1/2	6.5	32.1	I-R	Shu	Ros	34x5	34x5*	Mot	Fir	27	28	268	82	9
20	D. B. L.	B. L. 55	U	4	Spi	Tim 6516	Wo	F 1/2	4.6	19.7	I-R	Tim 1550	Ros	36x6*	36x6*	Bud	.....	20 1/2	38 1/2	342	89	7 1/2
21	D. B. L.	B. L. 50	U	4	Spi	Tim 6516	Wo	F 1/2	4.6	19.7	I-R	Tim 1524	Ros	36x6*	36x6*	Bud	.....	22 1/2	38	339	89	7 1/2
22	P. B. & B.	Det R400	S	4	Spi	Tim 6566	Wo	F 1/2	6.7	39.8	.....	Own	Gem	36x6*	36x8*	Smi	Fir	30	28	266 1/2	10	10
23	P. Own	Own J	S	4	Sne	Tim 6412	Wo	F 1/2	5.4	21.6	I-R	Tim 1523	Ros	36x6*	36x6*	Bud	.....	29 1/2	33	277	87 1/2	7
24	P. Own	Own L	S	4	Sne	Own L	Ig	F 1/2	6.6	26.1	E-D	Own L	Ros	36x5 1/2	36x5 1/2	Own	.....	25	33	296	90	6
25	D. Own	Own 51D	S&U	8	Spi	Tim 6516	Wo	F 1/2	5.4	26.1	I-R	Tim 1550	Ros	36x6*	36x6*	.....	Fir	28 1/2	30	295	91	7
26	D. B. L.	B. L. 31	U	3	U-M	Tim 5516H	B	F 1/2	5.3	21.3	I-F	Tim 2341H	Lav	32x6	32x6	Day	Fir	23	28	.....	84	9
27	D. B. L.	B. L. 60S	U	4	Spi	Tim	Wo	F 1/2	4.8	16.7	I-F	Tim 1560C	Ros	36x6	36x6*	Bud	Fir	23	35	.....	6 1/2	6 1/2
28	Ful	Ful	U	4	Spi	Tim	Wo	F 1/2	6.3	26.3	I-F	Tim	Ros	36x6*	36x6*	Bud	Fir	26	.....	298	.....	8
29	D. Dodge	Dodge	U	3	UP	Own	SP	F 1/2	6.3	26.3	I-R	Own	Dodge	32x6	34x7	Smi	Fir	29	29 1/2	252 1/4	87 1/4	8
30	D. B. L.	B. L. 51	S	7	Spi	Tim 6566	Wo	F 1/2	4.6	.....	I-F	Con	Ros	32x6	32x6*	Van	Fir	22	33	298	89	7
31	D. B. L.	B. L. 31	.....	3	.....	.....	B	.....	.....	.....	.....	Shu 5410	Ros	36x5	33x5*	Bud	.....	25	.....	.....	.....	.....
32	D.	B. L. 51	.....	4	.....	.....	R	.....	.....	.....	.....	She 445	.....	36x6	36x6*	Bud	.....	26	.....	.....	.....	.....
33	D. Mun	Mun	U	3	Own	Eat	Ig	F 1/2	5.4	.....	I-R	Eat	Own	33x5	33x5	Own	.....	24	.....	217	56	.....
34	D. B. L.	B. L. 35	U	4	Spi	Wis 60B	R	F 1/2	5.8	19.0	I-R	Shu 610	Ros	34x7*	34x7*	Whi	Gdy	29	27	252	76	8
35	D. B. L.	B. L. 31	U	3	Sne	Sal D	B	F 3/4	7.7	27.6	E-R	Sal	Gem	34x5	34x5	Ind	Fir	29	27	220	70	11
36	D. B. L.	B. L. 31	U	3	Spi	She	W	F 1/2	5.5	26.4	I-R	Shu 5550B	Ros	32x6	32x6*	Bud	.....	25	28	262	86	9
37	D. B. L.	B. L. 55	U	4	Spi	Huck 85	R	F 1/2	6.65	35.8	I-R	She D 445	Ros	34x7	34x7*	Bud	Fir	27 1/2	41	312 1/2	92 1/2	7 1/2
38	D. Own	Own AB	U	4	Spi	Own AB	R	F 1/2	6.7	21.5	I-R	Own AB	Own	32x6*	32x6*	Bud	Fir	25 1/4	28 1/4	228	78 1/2	8 1/4
39	D. Own	Own AB	U	4	Spi	Own AB	R	F 1/2	6.7	21.5	I-R	Own AB	Own	32x6*	32x6*	Bud	Fir	25 1/4	32	317 1/4	78 1/2	8 1/4
40	D. Own	Own AB	U	4	Spi	Own AB	R	F 1/2	6.7	21.5	I-R	Own AB	Own	32x6*	32x6*	Bud	Fir	27 1/4	32 1/2	307 1/4	78 1/2	10 1/4
41	B&B	Cam	A	3	U-M	Fli	SP	F 1/2	5.3	21.5	E-R	Fli	Lav	30x5	30x5*	Bud	Fir	24	27	244 1/2	75	7 1/2
42	D. Ful	Ful GU7	U	4	Spi	Wal 25A	R	F 1/2	7.6	37.0	-R	Shu 610	Ros	36x6	40x8	StM	Fir	26	33 1/2	.....	.....	.....
43	D. Det	Cot AAU	U	3	Spi	Wis 40R61	R	F 1/2	.....	.....	I-R	Shu	Ros	32x6*	32x6*	Ind	Fir	23 1/2	28	256	86	10
44	D-Det	Cot AU	U	3	Spi	Wis 120K	R	F 1/2	6.1	32.0	I-R	Tim 1550	Ros	36x6*	36x6*	Ind	Fir	26	30	256	86	10
45	D. B. L.	B. L. 30	U	3	Pet	Tim 5512	Wo	F 1/2	5.5	22.0	E-R	Tim 1250	Ros	32x6	32x6	Own	Gdy	23 1/2	.....	.....	.....	8 1/4
46	D. B. L.	B. L. 51	U	4	Pet	Tim 6410	Wo	F 1/2	6.0	32.1	I-R	Tim 1550	Ros	34x5*	34x5*	Bud	.....	24 1/2	.....	.....	.....	9
47	D. B. L.	B. L. 51	U	4	Pet	Tim 6511	Wo	F 1/2	6.0	32.1	I-R	Tim 1550	Ros	36x6*	36x6*	Bud	.....	25 1/2	.....	.....	.....	9
48	Own	Own W	A	4	Spi	Own W	Wo	F 1/2	6.0	32.0	E-D	Own	Own	36x6*	36x6*	Bud	.....	28	37 1/2	282	89 1/4	8
49	Own	Own W	A	4	Spi	Own W	Wo	F 1/2	6.0	32.0	E-D	Own	Own	36x6*	36x6*	Bud	.....	28	40	303	89 1/4	8
50	Own	Own W	S	3	Own	Own W	SP	F 1/2	5.7	21.0	E-R	Own W	Own	32x6	34x7	Bud	.....	28 1/2	31	197	85	8 1/2
51	Own	Own W	S	3	Own	Own W	SP	F 1/2	5.7	21.0	E-R	Own W	Own	32x6	32x6*	Bud	.....	28 1/2	31	264 1/2	88 1/2	8 1/2
52	Ful	Ful	U	3	Spi	Eat	Ig	F D	6.2	25.0	E-D	Eat	Jac	34x7	34x7	Van	Fir	21	.....	270 1/2	67 1/2	7 1/2
53	D. B. L.	B. L.	U	4	.....	Wis 460	S	F 1/2	5.50	27.3	A	Shu 5550	Jac	30x5	30x5	Bud	Fir	24	28	272	90	9
54	D. B. L.	B. L. 60	U	4	.....	Wis 66	R	F 1/2	5.83	23.3	A	Shu 5550B	Ros	32x6	32x6	Bud	Fir	24	32	310	90	9
55	B-L	B-L	U	4	Blo	Tim 6420	Wo	F 1/2	.....	.....	I-R	Tim 1550	Ros	34x7	34x7	Bud	.....	24 1/2	35	320 1/4	90	.....
56	D. Ful	Own	A	8	Blo	Wis	R	F 1/2	6.0	30.0	I-F	Shu	Ros	36x6*	36x6*	Bud	Fir	24 1/2	33 1/2	.....	91 1/4	7 1/2
57	D. B. L.	B. L. 31	U	3	Blo	Cla 501	B	F 1/2	Opt.	Opt.	.....	Shu	Ros	32x6	32x6	Van	Fir	24	.....	Opt.	Opt.	7 1/2
58	D. B. L.	B. L.	S	4	Spi	Tim	Wo	F 1/2	7.7	31.0	-R	Tim	Gem	36x5	36x5	Arc	Fir	29 1/2	33	309	91	7
59	D. B. L.	B. L. 50	U	4	Spi	Tim 6564	Wo	F 1/2	5.4	28.9	.....										

KEY OF ABBREVIATIONS

Wheelbase:

*—More than one wheelbase furnished.

Tires:

§§—Unless marked otherwise all tires are solids.
 *—Pneumatics standard equipment.
 †—Pneumatics at Extra Cost.
 ‡—Dual on Rear.

Engine:

Bud—Buda Co., Harvey, Ill.
 Con—Continental M. Corp., Detroit, Mich.
 D—Head & Side
 GBS—Golden, Belknap & Swartz Co., Detroit, Mich.
 H—Overhead.
 HaS—Hall-Scott Motor Car Co., Berkeley, Cal.
 Her—Hercules M. Mfg. Co., Canton, Ohio.
 Himico—Hinkley Motors, Inc., Detroit, Mich.
 Hin—Hinkley Motors, Inc., Detroit, Mich.
 H-S—Herschell-Spillman Motor Co., North Tonawanda, N. Y.
 Jackson—Master Motor Truck Mfg. Co., Chicago, Ill.
 Kni—Yellow Sleeve Valve Eng. Works, East Moline, Ill.
 L—L-Head.
 Lyc—Lycoming M. Corp., Williamsport, Pa.
 Mid—Midwest Eng. Co., Indianapolis, Ind.
 FP—Full Pressure to all bearings including wrist pins.
 Overland—Willys-Overland Co., Toledo, O.
 P—Pressure to all crankshaft and connecting rod bearings.
 PS—Pressure with splash.
 SP—Circulating splash.
 T—T-Head.
 Wau—Waukesha M. Co., Waukesha, Wis.
 Wis—Wisconsin M. Mfg. Co., Milwaukee, Wis.
 X—Sleeve.

Governor:

Con—Continental M. Corp., Detroit, Mich.
 Dup—Duplex Eng. Gov. Co., Brooklyn, N. Y.
 Han—Handy Gov. Co., Detroit, Mich.
 Hin—Hinkley Motors, Inc., Detroit, Mich.
 K. P.—K. P. Products Co., New York, N. Y.
 McK—E. R. Klemm, Chicago, Ill.
 Mon—Monarch Gov. Co., Detroit, Mich.
 Non—Not Supplied.
 Pha—Pharo Mfg. Co., Detroit, Mich.
 Pie—Pierce Governor Co., Anderson, Ind.
 Sim—Duplex Eng. Gov. Co., Brooklyn, N. Y.
 Wau—Waukesha M. Co., Waukesha, Wis.

Radiator:

Bus—Bush Mfg. Co., Hartford, Conn.
 Chi—Chicago Mfg. Co., Chicago, Ill.
 E-M—English & Mersick Co., New Haven, Conn.
 Fed—Feddars Mfg. Co., Buffalo, N. Y.
 Fle—Flexo Mfg. Co., Los Angeles, Cal.
 G&O—G. & O. Mfg. Co., New Haven, Conn.
 Har—Harrison Rad. Corp., Lockport, N. Y.
 Idl—Ideal Sheet Metal Works, Chicago, Ill.
 Liv—Livingston Radiator Corp., Plainfield, N. J.
 Lon—Long Mfg. Co., Detroit, Mich.
 McC—McCord Rad. & Mfg. Co., Detroit, Mich.
 Mod—Modine Mfg. Co., Racine, Wis.
 Per—Racine Radiator Co., Racine, Wis.
 R-T—Rome-Turney Rad. Co., Rome, N. Y.
 Stn—Standard Radiator Co., Inc., Springfield, N. Y.

Fuel System:

Car—Carter Carburetor Co., St. Louis, Mo.
 Ens—Ensign Car. Co., Los Angeles, Cal.
 G—Gravity.
 Hol—Holley Carburetor Co., St. Louis, Mo.
 Joh—Johnson Co., Detroit, Mich.
 Mar—Marvel Carburetor Co., Flint, Mich.
 P—Pressure.
 Ray—Beneke & Kropf Mfg. Co., Chicago, Ill.
 Sch—Wheeler Schebler Carburetor Co., Indianapolis, Ind.
 Ste—Detroit Lubricator Co., Detroit, Mich.
 Str—Stromberg Motor Devices Co., Chicago, Ill.
 Til—Tillotson Mfg. Co., Toledo, Ohio.
 V—Vacuum.
 Zen—Zenith-Detroit Corp., Detroit, Mich.

Electrical System:

‡—Generator & Starter at Extra Cost.
 †—Starter not Supplied, Generator at Extra Cost.
 *—Starter at Extra Cost.
 A-L—Electric Auto-Lite Corp., Toledo, O.
 Apo—Apollo Magneto Corp., Apollo, Pa.
 Bij—Bijur Motor Appliance Co., Hoboken, N. J.
 Bos—American Bosch Magneto Co., Springfield, Mass.
 Con—Connecticut Telephone & Electric Co., Meriden, Conn.
 Del—Dayton Engin. Lab. Co., Dayton, Ohio.
 Dyn—Owen Dyneto Corp., Syracuse, N. Y.
 Eis—Eisemann Magneto Corp., Brooklyn, G&D—Gray & Davis, Boston, Mass.
 L-N—Leece-Neville Co., Cleveland, O.
 N-E—North East Elec. Co., Rochester, N. Y.
 Non—Not Supplied.
 Rem—Remy Electric Co., Anderson, Ind.
 RBo—Robert Bosch Magneto Co., New York, N. Y.
 Sci—Scintilla Magneto Co., New York, N. Y.
 Sim—Simms Magneto Co., E. Orange, N. J.
 Spl—Splittorf Electrical Co., Newark, N. J.
 Ves—Vesta Battery Corp., Chicago, Ill.
 Wes—Westinghouse Elec. & Mfg. Co., Springfield, Mass.

Clutch and Gearset:

*—Other ratios optional.
 A—Amidships.
 B & B—Borg & Beck Co., Chicago, Ill.
 B-L—Brown-Lipe Gear Co., Syracuse, N. Y.
 Cot—Cotta Transmission Corp., Rockford, Ill.
 Cov—Covert Gear Co., Lockport, N. Y.
 Det—A. J. Detlaff Co., Detroit, Mich.
 D-G—Detroit Gear & Machine Co., Detroit, Mich.
 Dod—Dodge Brothers Co., Detroit, Mich.
 D—Disk.
 Dur—Durstion Gear Corp., Syracuse, N. Y.
 Ful—Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 H-S—Hele-Shaw, Merchant & Evans Co., Philadelphia, Pa.
 J—Unit with Jackshaft.
 K—Cone.
 Lon—Long Mfg. Co., Detroit, Mich.
 M-E—Merchant & Evans Co., Phila., Pa.
 Mun—Muncie Gear Works, Muncie, Ind.
 O—Disk in Oil.
 P—Plate.
 R—Rear Axle.
 U—Unit with Engine.
 W-G—Warner Gear Co., Muncie, Ind.

Universal:

B.G.—Universal Machine Co., Bowling Green, Ohio.
 Blo—Blood-Bros. Mach. Co., Allegan, Mich.
 Det—Universal Products Co., Detroit, Mich.
 Har—Hartford Auto Parts Corp., Hartford, Conn.
 M-E—Merchant & Evans Co., Phila., Pa.
 Pet—Cleveland Universal Parts Co., Cleveland, Ohio.
 Pic—Carl Pick Co., West Bend, Wis.
 Sne—Snead & Co., Jersey City, N. J.
 Spl—Spicer Mfg. Corp., S. Plainfield, N. J.
 The—Thermold Rubber Co., Trenton, N. J.
 Thei—Universal Drive Shaft Co., Cleveland, Ohio.
 U-M—Universal Machine Co., Bowling Green, Ohio.
 U-P—Universal Products Co., Detroit, Mich.

Front and Rear Axles:

½—Semi-Floating.
 ¾—Three-Quarter Floating.
 Cla—Clark Equip. Co., Buchanan, Mich.
 Col—Columbia Axle Co., Cleveland, O.
 Con—Continental Axle Co., Edgerton, Wis.
 C—Chain.
 B—Straight Bevel.
 D—Dead.
 Eat—Eaton Axle Co., Cleveland, Ohio.
 F—Floating.
 I—Internal Gear.
 P—Spur Gear.
 R—Double Reduction.
 Rus—Russel Motor Axle Co., Detroit, Mich.
 S—Spiral Bevel.
 Sal—Salisbury Axle Co., Jamestown, N. Y.
 She—Sheldon Axle & Spring Co., Wilkes-Barre, Pa.
 Shu—Shuler Axle Co., Inc., Louisville, Ky.
 Std—Standard Parts Co., Cleveland, O.

Tim—Timken Detroit Axle Co., Detroit, Mich.
 Tor—Eaton Axle & Spring Co., Cleveland, Ohio.
 Vul—Vulcan Motor Axle Co.
 Wal—Walker Axle Co., Chicago, Ill.
 W—Worm.
 Wis—Wisconsin Parts Co., Oshkosh, Wis.

Brake:

A—Rear Wheels only.
 B—Drive Shaft and Rear Wheels.
 C—Front and Rear Wheel.
 D—Jackshaft and Rear Wheels.
 E—4 Wheel Brakes.

Springs:

Amc—American Auto Parts Co., Detroit, Mich.
 Arm—General Motors Co., Pontiac, Mich.
 Bea—Beans Spring Co., Inc., Massillon, O.
 Bet—Betts Bros. Sp. Co., Inc., San Francisco, Cal.
 Cha—Champion Auto Sp. Co., St. Louis, Mo.
 Del—D. Delany & Son, Newark, N. J.
 Det—Detroit Steel Prod. Co., Detroit, Mich.
 G-C—Garden City Sp. Works, Chicago, Ill.
 Har—Harvey Sp. & Forging Co., Racine, Wis.
 Lah—Laher Auto Spring Co., Portland, Ore.
 Mar—Maremont Mfg. Co., Chicago, Ill.
 Mat—Mather Spring Co., Toledo, O.
 Mer—E. R. Merrill Spring Co., New York.
 Pen—Penn Sp. Works, Baldwinville, N. Y.
 Per—Perfection Sp. Co., Cleveland, O.
 Row—William & Harvey Rowland, Phila., Pa.
 She—Sheldon Axle & Sp. Co., Wilkes-Barre, Pa.
 S. P.—Spring Perch Co., Stratford, Conn.
 S. S.—Standard Steel Sp. Co., Coraopolis, Pa.
 Tut—Tuthill Sp. Co., Chicago, Ill.
 U. S.—United States Sp. Co., Los Angeles, Cal.

Steering Gear:

CAS—C. A. S. Products Co., Columbus, O.
 Dod—Dodge Bros. Co., Detroit, Mich.
 Gem—Gemmer Mfg. Co., Detroit, Mich.
 Jac—Saginaw Products Co., Saginaw, Mich.
 Lav—Lavine Gear Co., Milwaukee, Wis.
 Ros—Ross Gear & Tool Co., Lafayette, Ind.
 Woh—Wohlrab Gear Co., Racine, Wis.

Wheels:

Arc—Archibald Wheel Co., Lawrence, Mass.
 A-W—Auto Wheel Co., Lansing, Mich.
 Bet—Bethlehem Steel Co., Bethlehem, Pa.
 Bim—Bimel Spoke & Auto Wheel Co., Portland, Ind.
 Bud—Budd Wheel Co., Phila., Pa.
 Cla—Clark Equip. Co., Buchanan, Mich.
 Day—Dayton Steel Foundry Co., Dayton, Ohio.
 Dis—Disteel Wheel Corp., Detroit, Mich.
 Hay—Hayes Wheel Co., Jackson, Mich.
 Hoo—Hoopes, Bro. & Darlington, Inc., West Chester, Pa.
 Ind—Indestructible Wheel Co., Lebanon, Ind.
 Int—Interstate Foundry Co., Chicago, Ill.
 Jon—Jones, Phineas & Co., Newark, N. J.
 Kel—Kelsey Wheel Co., Detroit, Mich.
 M-M—Michigan Malleable Iron Co., Detroit.
 Mot—Motor Wheel Corp., Lansing, Mich.
 Mun—Muncie Wheel Co., Muncie, Ind.
 Nor—Northern Wheel Corp., Alma, Mich.
 Pru—Prudden Wheel Co., Lansing, Mich.
 Roy—Royer Wheel Co., Aurora, Ind.
 Sch—Schwarz Wheel Co., Phila., Pa.
 Smi—Smith Wheel, Inc., Syracuse, N. Y.
 StM—St. Marys Wheel Co., St. Marys, O.
 Std—Standard Wheel Co., Terre Haute, Ind.
 Van—Van Wheel Corp., Onelda, N. Y.
 Way—Wayne Wheel Co., Newark, N. Y.

Rim Equipment:

Fir—Firestone Steel Products Co., Akron, Ohio.
 Gdy—Goodyear Tire & Rubber Co., Akron, Ohio.
 Hay—Hayes Wheel Co., Jackson, Mich.
 Jax—Jaxon Steel Prod. Co., Jackson, Mich.
 Kel—Kelsey Wheel Co., Detroit, Mich.
 Non—None Supplied.

Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

* Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line
Fan Belt Type: V—V-Shape, F—Flat, R—Round

NAME, MODEL AND TONNAGE	ENGINE										BRAKE LINING						FRAME								
	Piston Rings		Carburetor		Upper Hose		Lower Hose		Fan Belt		Service			Emergency			Length			Width					
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis
Ace 40-1 1/2	3	1 1/4	1 1/4	1 1/4	V	7	1 1/4	15	1 1/4	40 1/2	2 1/2	F	12	3 1/4	1 1/4	4	12 1/2	3 1/4	1 1/4	4	122 1/2	76 1/4	215 1/4	32	9 1/4
Ace 60-3	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	11	1 1/4	42 1/2	1 1/4	F	23 1/2	2 1/2	1 1/4	2	48	2 1/4	1 1/4	1	96 1/2	56 1/2	189	34	8 1/2
Ace Flyer	3	1 1/4	1 1/4	1 1/4	V	8 1/2	1 1/4	10	1 1/4	42 1/2	1 1/4	F	12	3 1/4	1 1/4	4	12	3 1/4	1 1/4	1	108 1/2	63 1/2	200	34	10 1/2
Ace 20L-1 1/2	3	1 1/4	1 1/4	1 1/4	V	11 1/2	1 1/4	12 1/2	1 1/4	41 1/2	1 1/4	F	13	3 1/4	1 1/4	2	13	3 1/4	1 1/4	2	140 1/2	79 1/2	235 1/2	34	10
Ace 60L-3	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	10	1 1/4	40 1/2	1 1/4	F	15 1/2	3 1/4	1 1/4	2	15 1/2	3 1/4	1 1/4	2	153 1/2	96 1/2	255	37	10 1/2
Ace 90L-5	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	10	1 1/4	40 1/2	1 1/4	F	18	4	1 1/4	2	18	4	1 1/4	2	159 1/2	99 1/2	261	37	10 1/2
Ace 125-6 1/4	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	10	1 1/4	40 1/2	1 1/4	F	18	4	1 1/4	2	18	4	1 1/4	2	159 1/2	99 1/2	261	37	10 1/2
American-LaFrance W.	3	1 1/4	1 1/4	1 1/4	V	5 1/2	1 1/4	10 1/2	1 1/4	36	2	F	11 1/2	8	1 1/4	4	17	3 1/4	1 1/4	4	132	81 1/2	236 1/2	33	10
American-LaFrance W.	3	1 1/4	1 1/4	1 1/4	V	5 1/2	1 1/4	10 1/2	1 1/4	36	2	F	11 1/2	8	1 1/4	4	17	3 1/4	1 1/4	4	156	98 1/2	260 1/2	33	10
American-LaFrance W.	3	1 1/4	1 1/4	1 1/4	V	5 1/2	1 1/4	10 1/2	1 1/4	36	2	F	11 1/2	8	1 1/4	4	17	3 1/4	1 1/4	4	180	110	284 1/2	33	10
American-LaFrance Y.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	144 1/2	89 1/2	244 1/2	36 1/2	9
American-LaFrance Y.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	168 1/2	103 1/2	268 1/2	36 1/2	9
American-LaFrance Y.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	210 1/2	124 1/2	310 1/2	36 1/2	10
American-LaFrance Y.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	144 1/2	90 1/2	244 1/2	36 1/2	9
American-LaFrance Y.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	192 1/2	113 1/2	292 1/2	36 1/2	10
American-LaFrance Y.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	210 1/2	125	310 1/2	36 1/2	10
American-LaFrance V.	3	1 1/4	1 1/4	1 1/4	V	9	1 1/4	11 1/2	1 1/4	42	2	F	11 1/2	8	1 1/4	2	21	4	1 1/4	4	Opt	71 1/2	215 1/2	32	9 1/4
Armleder 30-1 1/2	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	16 1/2	1 1/4	33 1/2	1 1/4	F	13	3 1/4	1 1/4	4	13	3 1/4	1 1/4	4	Opt	77 1/2	228 1/2	32	10
Armleder 50-2 1/2	4	1 1/4	1 1/4	1 1/4	V	12	1 1/4	17 1/2	1 1/4	35 1/2	2	F	13	3 1/4	1 1/4	4	13	3 1/4	1 1/4	4	Opt	77 1/2	228 1/2	32	10
Atterbury 24-R	4	1 1/4	1 1/4	1 1/4	V	10 1/4	1 1/4	16	1 1/4	34 1/4	1 1/4	V	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	119 1/4	76	211 1/4	34	9 1/4
Atterbury 22C-2 1/4	4	1 1/4	1 1/4	1 1/4	V	10 1/4	1 1/4	16	1 1/4	34 1/4	1 1/4	V	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	129 1/4	78 1/4	225	34	9 1/4
Atterbury 22D-3 1/4	4	1 1/4	1 1/4	1 1/4	V	10 1/4	1 1/4	16	1 1/4	34 1/4	1 1/4	V	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	142 1/4	93 1/4	242	37 1/4	10 1/4
Atterbury 24E	4	1 1/4	1 1/4	1 1/4	V	10 1/4	1 1/4	16	1 1/4	34 1/4	1 1/4	V	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	159 1/4	89 1/4	263	37 1/4	10 1/4
Autocar XXI-F-1 1/4	4	1 1/4	1 1/4	1 1/4	V	5	1 1/4	9 1/4	1 1/4	49 1/4	2	F	16 1/4	2 1/4	1 1/4	4	13 1/4	2 1/4	1 1/4	4	91	67	156	34	9 1/4
Autocar XXI-G-1 1/4	4	1 1/4	1 1/4	1 1/4	V	5	1 1/4	9 1/4	1 1/4	49 1/4	2	F	16 1/4	2 1/4	1 1/4	4	13 1/4	2 1/4	1 1/4	4	114	90	179	34	9 1/4
Autocar XXVI-M4-6	3	1 1/4	1 1/4	1 1/4	V	3 1/4	1 1/4	3 1/4	1 1/4	49 1/4	2	F	23 1/4	2 1/4	1 1/4	4	23 1/4	2 1/4	1 1/4	4	139 1/4	80 1/4	223 1/4	34 1/4	10
Autocar XXVI-L4-6	3	1 1/4	1 1/4	1 1/4	V	3 1/4	1 1/4	3 1/4	1 1/4	49 1/4	2	F	23 1/4	2 1/4	1 1/4	4	23 1/4	2 1/4	1 1/4	4	175 1/4	116 1/4	259 1/4	34 1/4	10
Autocar XXVII-H3	3	1 1/4	1 1/4	1 1/4	V	3 1/4	1 1/4	3 1/4	1 1/4	47 1/4	2	F	20 1/4	2	1 1/4	4	20 1/4	2	1 1/4	4	131 1/4	76	213 1/4	34 1/4	10 1/4
Autocar XXVII-K3	3	1 1/4	1 1/4	1 1/4	V	3 1/4	1 1/4	3 1/4	1 1/4	47 1/4	2	F	20 1/4	2	1 1/4	4	20 1/4	2	1 1/4	4	155 1/4	100	237 1/4	34 1/4	10 1/4
Available J-H-1 1/2	4	1 1/4	1 1/4	1 1/4	V	11	1 1/4	14	1 1/4	40	2	F	48	2 1/4	1 1/4	2	36	2 1/4	1 1/4	2	120	80 1/2	231 1/2	32	9
Available J-H2	4	1 1/4	1 1/4	1 1/4	V	12	1 1/4	14	1 1/4	40	2	F	48	2 1/4	1 1/4	2	36	2 1/4	1 1/4	2	120	84 1/2	232	32	9
Available J-H-2 1/2	3	1 1/4	1 1/4	1 1/4	V	11	1 1/4	14	1 1/4	40	2	F	13 1/2	3 1/4	1 1/4	4	13 1/2	3 1/4	1 1/4	4	144	85 1/2	226 1/2	32	9
Available J-H-3 1/2	4	1 1/4	1 1/4	1 1/4	V	12	1 1/4	14	1 1/4	40	2	F	16	4	1 1/4	4	16	4	1 1/4	4	168	106 1/2	254 1/2	36	9
Available J-H-5	3	1 1/4	1 1/4	1 1/4	V	12	1 1/4	16	1 1/4	40	2	F	18	4	1 1/4	4	18	4	1 1/4	4	168	112 1/2	263 1/2	38	0
Bessemer G-1	3	1 1/4	1 1/4	1 1/4	V	11 1/4	2 1/4	10	2 1/4	42	3 1/4	V	46	2 1/4	1 1/4	2	44	2 1/4	1 1/4	2	98 1/4	58 1/4	182 1/4	34	.....
Bessemer H-2-1 1/2	3	1 1/4	1 1/4	1 1/4	V	11 1/4	2 1/4	10	2 1/4	42	3 1/4	V	16 1/4	2 1/4	1 1/4	2	16 1/4	2 1/4	1 1/4	2	116	76	203	34	.....
Bessemer J2-2 1/4	3	1 1/4	1 1/4	1 1/4	V	12	1 1/4	10	1 1/4	36 1/4	1 1/4	F	18 1/4	2 1/4	1 1/4	2	20 1/4	2 1/4	1 1/4	2	142 1/4	92 1/4	229	34	.....
Bethlehem KN-1	3	1 1/4	1 1/4	1 1/4	V	8 1/2	2 1/4	8	2 1/4	35 1/4	1 1/4	F	51	2 1/4	1 1/4	1	37	2 1/4	1 1/4	1	89 1/4	54 1/4	175	32 1/4	10 1/4
Bethlehem LN-2	3	1 1/4	1 1/4	1 1/4	V	8 1/2	2 1/4	8	2 1/4	35 1/4	1 1/4	F	51	2 1/4	1 1/4	1	37	2 1/4	1 1/4	1	116 1/4	74	208 1/4	34 1/4	9 1/4
Bethlehem LN-2	3	1 1/4	1 1/4	1 1/4	V	8 1/2	2 1/4	8	2 1/4	35 1/4	1 1/4	F	51	2 1/4	1 1/4	1	37	2 1/4	1 1/4	1	134 1/4	81 1/4	226 1/4	34 1/4	8 1/4
Bethlehem LN-2	3	1 1/4	1 1/4	1 1/4	V	8 1/2	2 1/4	8	2 1/4	35 1/4	1 1/4	F	11	3	1 1/4	4	11	3	1 1/4	4	126	90	215	34	10
Bets J3-1	3	1 1/4	1 1/4	1 1/4	V	12	1 1/4	17	1 1/4	33 1/4	1 1/4	F	12	3 1/4	1 1/4	4	12	3 1/4	1 1/4	4	Opt	.....	204	32	10
Bets D3-2 1/2	3	1 1/4	1 1/4	1 1/4	V	12	1 1/4	12	1 1/4	33 1/4	1 1/4	F	43	2 1/4	1 1/4	4	43	2 1/4	1 1/4	4	96	72	204	32	10
Biederman 20-1-1 1/2	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	14	1 1/4	34	1 1/4	F	12	3 1/4	1 1/4	8	12	3 1/4	1 1/4	8	120	84	228	32	10
Biederman 30-1 1/2																									

Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE										BRAKE LINING								FRAME						
	Piston Rings		Carburetor		Upper Hose		Lower Hose		Fan Belt		Service				Emergency				Length			Width			
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis
Commerce 25B-5000.....	4	1 1/4	1 1/4	1 1/4	V	9 1/2	1 1/2	15 1/2	1 1/2	42	1 1/2	F	13	3 1/2	1 1/4	4	13	3 1/2	1 1/4	4	132	84	228 1/2	34	12 1/2
Concord E-1.....	4	1 1/4	1	1	V	7	1 1/2	9 1/2	1 1/2	33 1/2	2	F	12	3	1 1/4	4	12	3	1 1/4	4	.....	.....	.....	32 1/2	.....
Concord G-2.....	4	1 1/4	1	1	V	7	1 1/2	9 1/2	1 1/2	33 1/2	2	F	13 1/2	3 1/2	1 1/4	4	13 1/2	3 1/2	1 1/4	4	.....	.....	.....	32 1/2	.....
Concord H-2.....	4	1 1/4	1 1/4	1 1/4	V	7	1 1/2	9 1/2	1 1/2	33 1/2	2	F	12	3 1/2	1 1/4	4	12	3 1/2	1 1/4	4	.....	.....	.....	32 1/2	.....
Concord J-2 1/2.....	4	1 1/4	1 1/4	1 1/4	V	7	1 1/2	9 1/2	1 1/2	33 1/2	2	F	13 1/2	3 1/2	1 1/4	4	13 1/2	3 1/2	1 1/4	4	.....	.....	.....	32 1/2	.....
Concord JL-3.....	4	1 1/4	1 1/4	1 1/4	V	7	1 1/2	9 1/2	1 1/2	33 1/2	2	F	13 1/2	3 1/2	1 1/4	4	13 1/2	3 1/2	1 1/4	4	.....	.....	.....	32 1/2	.....
Corbitt S-3 1/2.....	3	1 1/4	1	1	V	8	2	14	2	38	1 1/2	F	16 1/2	1 1/2	1 1/4	4	16 1/2	1 1/2	1 1/4	4	103	59	196	34	11 1/2
Corbitt E-1.....	3	1 1/4	1	1	V	9	2	12	2	41	1 1/2	F	16 1/2	1 1/2	1 1/4	4	16 1/2	1 1/2	1 1/4	4	104	62	198	34	11 1/2
Corbitt D-1 1/2.....	3	1 1/4	1	1	V	11	1 1/2	15	1 1/2	46	1 1/2	F	18	2	1 1/4	4	18	2	1 1/4	4	110	72	206	34	10
Corbitt C-2.....	3	1 1/4	1 1/4	1 1/4	V	13	1 1/2	15	1 1/2	46	1 1/2	F	22 1/2	2 1/4	1 1/4	4	22 1/2	2 1/4	1 1/4	4	132	78	230	35	10 1/2
Corbitt B-2 1/2.....	3	1 1/4	1 1/4	1 1/4	V	13	1 1/2	15	1 1/2	46	1 1/2	F	22 1/2	2 1/4	1 1/4	4	22 1/2	2 1/4	1 1/4	4	136	78	232	35	10 1/2
Corbitt R-2 1/2-3.....	3	1 1/4	1 1/4	1 1/4	V	14	1 1/2	8	1 1/2	46	1 1/2	F	22 1/2	2 1/4	1 1/4	4	22 1/2	2 1/4	1 1/4	4	153	92	254	35	10 1/2
Corbitt A-3 1/2-4.....	3	1 1/4	1 1/4	1 1/4	V	14	1 1/2	8	1 1/2	46	1 1/2	F	21	4	1 1/4	2	21	3	1 1/4	2	168	106	266	35	9
Corbitt AA-5.....	3	1 1/4	1 1/2	1 1/2	V	13	2	14	2	36	1 1/2	F	68 1/2	3	1 1/4	2	68 1/2	3	1 1/4	2	168	106	268	38	10
Day-Elder G-1 1/2.....	4	1 1/4	1	1 1/4	V	.....	1 1/4	.....	1 1/4	.....	1 1/2	F	11 1/2	3 1/4	1 1/4	4	11 1/2	3 1/4	1 1/4	4	105 1/2	61 1/4	191	35	10 1/2
Day-Elder H-2.....	4	1 1/4	1	1 1/4	V	.....	1 1/4	.....	1 1/4	.....	1 1/2	F	11 1/2	3 1/4	1 1/4	4	11 1/2	3 1/4	1 1/4	4	132 1/2	77 1/4	218	34	9 1/2
Day-Elder I-2 1/2.....	4	1 1/4	1 1/4	1 1/4	V	.....	1 1/4	.....	1 1/4	.....	2	F	13 1/2	3 1/2	1 1/4	4	13 1/2	3 1/2	1 1/4	4	123 1/2	77 1/4	216	35	10 1/2
Day-Elder J-3.....	4	1 1/4	1 1/4	1 1/4	V	.....	2	.....	1 1/4	.....	2	F	13 1/2	3 1/2	1 1/4	4	13 1/2	3 1/2	1 1/4	4	115 1/2	77 1/4	214 1/2	35	10 1/2
Day-Elder K-4.....	4	1 1/4	1 1/4	1 1/4	V	.....	2	.....	1 1/4	.....	2	F	15 1/2	3 1/2	1 1/4	4	15 1/2	3 1/2	1 1/4	4	121	86	220	37	8 1/2
Day-Elder L-5.....	4	1 1/4	1 1/4	1 1/4	V	.....	2	.....	1 1/4	.....	2	F	17 1/2	4	1 1/4	4	17 1/2	4	1 1/4	4	148	88	253	37	10 1/2
Diamond T-75 1/2-1.....	3	1 1/4	1	1 1/4	V	8	1 1/2	10 1/2	1 1/2	33 1/2	1 1/2	F	48	2 1/2	1 1/4	2	46 1/2	2 1/2	1 1/4	2	90	57 1/2	182 1/2	34	.....
Diamond T-04-1-1 1/2.....	3	1 1/4	1	1 1/4	V	9	1 1/2	6	1 1/2	35	2	F	22	2 1/2	1 1/4	4	33	2 1/2	1 1/4	4	100	.....	.....	34	.....
Diamond T-T-1 1/2.....	3	1 1/4	1	1 1/4	V	9	1 1/2	6	1 1/2	35	2	F	11 1/2	3 1/4	1 1/4	4	11 1/2	3 1/4	1 1/4	4	Opt	.....	.....	34	.....
Diamond T-U2-2 1/2.....	3	1 1/4	1 1/4	1 1/4	V	9	1 1/2	8	1 1/2	35	2	F	13 1/2	3 1/4	1 1/4	4	13 1/2	3 1/4	1 1/4	4	Opt	.....	.....	34	.....
Diamond TK-3 1/2.....	3	1 1/4	1 1/2	1 1/2	V	10	1 1/2	10	1 1/2	35	2	F	15 1/2	3 1/4	1 1/4	4	15 1/2	3 1/4	1 1/4	4	Opt	.....	.....	37	.....
Diamond T-S-5.....	3	1 1/4	1 1/2	1 1/2	V	9	2	21	2	40 1/2	2	F	18	4	1 1/4	4	17 1/2	4	1 1/4	4	Opt	.....	.....	37	.....
Dixon Model D.....	4	1 1/4	1	1	V	11	1 1/2	8	1 1/2	41	.....	F	13	3 1/2	1 1/4	4	13	3 1/2	1 1/4	4	126	71	221 1/2	34 1/2	9 1/2
Dixon Model C.....	4	1 1/4	1 1/4	1 1/4	V	11	1 1/2	10	1 1/2	42	.....	F	13	3 1/2	1 1/4	4	13	3 1/2	1 1/4	4	Opt	71	221 1/2	34 1/2	9 1/2
Dixon Model A.....	4	1 1/4	1 1/4	1 1/4	V	12	1 1/2	10	1 1/2	42	.....	F	.....	3 1/2	1 1/4	4	13	3 1/2	1 1/4	4	Opt	71	221 1/2	36	9 1/2
Dorris K-4-2 1/2.....	3	1 1/4	1 1/4	1 1/4	V	2 1/2	1 1/2	6 1/4	1 1/2	42 1/2	2	F	13 1/2	3 1/4	1 1/4	4	13 1/2	3 1/4	1 1/4	4	142 1/2	96 1/2	233 1/2	34	9
Dorris K-7-3 1/2.....	3	1 1/4	1 1/4	1 1/4	V	2 1/2	1 1/2	6 1/4	1 1/2	42 1/2	2	F	15 1/2	3 1/4	1 1/4	4	15 1/2	3 1/4	1 1/4	4	178 1/2	130 1/2	270 1/2	36	9
Double Drive TT-3.....	4	1 1/4	1 1/4	1 1/4	V	12	2	19	1 1/2	34	2	F	15 1/2	4	1 1/4	4	18	4	1 1/4	4	132	100	216	34	9 1/2
Duplex G.....	4	1 1/4	1	1	V	.....	1 1/4	.....	1 1/4	.....	.....	F	11	2 1/2	1 1/4	4	11	2 1/2	1 1/4	4	102	.....	.....	34	.....
Duplex GH.....	4	1 1/4	1	1	V	.....	1 1/4	.....	1 1/4	.....	.....	F	19	2	1 1/4	4	19	2	1 1/4	4	112	.....	.....	34	.....
Duplex A.....	3	1 1/4	1 1/4	1 1/4	V	.....	1 1/4	.....	1 1/4	.....	.....	F	20	2 1/4	1 1/4	4	20	2 1/4	1 1/4	4	121	.....	.....	34	.....
Duplex AC.....	3	1 1/4	1 1/4	1 1/4	V	.....	1 1/4	.....	1 1/4	.....	.....	F	26	2	1 1/4	4	26	2	1 1/4	4	140	.....	.....	34	.....
Duplex E.....	3	1 1/4	1 1/4	1 1/4	V	.....	2	.....	1 1/4	.....	.....	F	52	2 1/2	1 1/4	4	52	2 1/2	1 1/4	4	128	.....	.....	40	.....
Duplex FD.....	4	1 1/4	1 1/4	1 1/4	V	.....	2	.....	1 1/4	.....	.....	F	26 1/2	2	1 1/4	4	26 1/2	2	1 1/4	4	Opt	.....	.....	34	.....
Eagle 100-2.....	4	1 1/4	1 1/4	1	V	14	2	16	1 1/4	36	1 1/2	.....	49 1/2	3	1 1/4	2	46	2	1 1/4	2	Opt	.....	.....	36	.....
Eagle 101-1 1/2.....	4	1 1/4	1 1/4	1	V	14	2	16	1 1/4	34	1 1/2	.....	21	3 1/2	1 1/4	4	21	2 1/2	1 1/4	4	Opt	.....	.....	31	.....
Eagle 104-2-3.....	4	1 1/4	1 1/4	1 1/4	V	14	2	16	1 1/4	36	1 1/2	F	49 1/2	3	1 1/4	2	46	2	1 1/4	2	Opt	.....	.....	32	.....
Eagle 105-2-3 Ton.....	4	1 1/4	1 1/4	1 1/4	V	14	2	16	1 1/4	36	1 1/2	F	58	2 1/2	1 1/4	2	44	2 1/2	1 1/4	2	Opt	.....	.....	32	.....
Fageol 235-2.....	3	1 1/4	1 1/4	1 1/4	V	7	1 1/2	15 1/2	1 1/2	37 1/2	1 1/2	F	12 1/2	3 1/4	1 1/4	2	12 1/2	3 1/4	1 1/4	2	120	68 1/2	222 1/2	34	.....
Fageol 340-3.....	3	1 1/4	1 1/4	1 1/4	V	7	1 1/2	15 1/2	1 1/2	37 1/2	1 1/2	F	13 1/2	3 1/4	1 1/4	2	13 1/2	3 1/4	1 1/4	2	141	81	243 1/2	34	.....
Fageol 445-4.....	3	1 1/4	1 1/4	1 1/4	V	10	1 1/2	17	1 1/2																

Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE											BRAKE LINING								FRAME					
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length		Width		
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis
Gramm-Bernstein 75P-3½	3	1¼	1¼	1½	V	11	1½	9	1½	33¾	2	F	22¾	2¼	1¼	4	22¾	2¼	1¼	4	129¾	87¾	240¾	36	10¾
Gramm-Bernstein 40-4	3	1¼	1¼	1½	V	11	1½	9	1½	33¾	2	F	28¾	2¼	1¼	4	28¾	2¼	1¼	4	144	87¾	240¾	36	10¾
Gramm-Bernstein 50-5-6	3	1¼	1½	1½	V	23¾	2	13¾	1½	40¾	2	F	32¾	2¼	1¼	4	32¾	2¼	1¼	4	132	97	263½	36	10¾
Grass Premier 40A	3	1	1	1½	V	12	2¼	14½	2¼	29	1	F	22½	1¼	1¼	2	48	2¼	1¼	2	98	70	192	31	10¾
Grass Premier 60A1½	4	1¼	1¼	1½	V	14	2¼	16	2¼	36½	1	F	48½	2¼	1¼	2	47	1½	1¼	2	108	66	204	31	10¾
Grass Premier 70A2½	4	1¼	1¼	1½	V	14	2¼	16	2¼	36½	1	F	48½	2¼	1¼	2	47	1½	1¼	2	120	66	214	31	10¾
Grass Premier 90A3½	3	1¼	1¼	1½	V	11	1½	11	1½	40	1½	F	15½	3¾	1¼	4	15½	3¾	1¼	4	95	83	192	35	10¾
G. W. W. Super	3	1	1¼	1¼	V	8	1¾	17½	1¼	37½	1¼	F	49	2½	1¼	2	47	1½	1¼	2	89	72	192	32	11¾
Harvey WOA-2	4	1¼	1¼	1½	V	11	2	14	1¼	35¾	2	F	45	2	1¼	2	45	2	1¼	2	139	87	242¼	32	10
Harvey WFB-2½	4	1¼	1¼	1½	V	11	2	14	1¼	35¾	2	F	50	2¼	1¼	2	50	2¼	1¼	2	139	87	242¼	32	10
Harvey WTT-6	4	1¼	1¼	1½	V	7	2	14	1¼	36	2	F	13	3½	1¼	4	13	3½	1¼	4	83	52	186½	32	10
Harvey WHB-3½	4	1¼	1¼	1½	V	12	2	14	1¼	36½	2	F	20¾	4	1¼	4	20¾	3	1¼	4	151¾	85½	258½	35	9
Harvey WFT-6	4	1¼	1¼	1½	V	11	2	14	1¼	36½	2	F	50	2¼	1¼	2	50	2¼	1¼	2	84	52	189	32	10
Harvey WFC-2½	4	1¼	1¼	1½	V	7	2	14	1¼	36	2	F	13	3½	1¼	4	13	3½	1¼	4	139	87	242¼	32	10
Harvey WHT-10	4	1¼	1¼	1½	V	12	2	14	1¼	36½	2	F	20¾	4	1¼	4	20¾	3	1¼	4	86	52½	191½	35	9
Indiana 15-1½	3	1¼	1¼	1½	V	17	1¼	14	1¼	38½	1	F	19	2	1¼	4	19	2	1¼	4	114	67¾	213¼	34	10¾
Indiana 20-2	3	1¼	1¼	1½	V	6	1¼	13	1¼	26¾	1½	F	22¼	2¼	1¼	4	22¼	2¼	1¼	4	126	74¾	226½	33	10¾
Indiana 25-2½	3	1¼	1¼	1½	V	6	1¼	13	1¼	26¾	1½	F	22¼	2¼	1¼	4	22¼	2¼	1¼	4	138	81	229	33	9¾
Indiana 35-3½	3	1¼	1¼	1½	V	6	1¼	13	1¼	26¾	1½	F	20¾	3½	1¼	4	20¾	3½	1¼	4	139	79¾	244¾	34½	8¾
Indiana 51-5	3	1¼	1¼	1½	V	10	1½	17½	1¼	40½	1½	F	65¾	3	1¼	2	65¾	3	1¼	2	152¼	87	260	37½	10¾
Inter'l S-2000 lbs.-Sp. Tr.	3	1¼	1¼	1¼	V	9¾	2¼	17¾	2¼	30¾	1	F	38	2	1¼	2	36	2	1¼	2	88	57¾	194¾	34	11¾
International 33-3000 lbs.	4	1¼	1¼	1¼	V	6¾	2½	6½	2½	43¾	1½	F	43¾	2¼	1¼	2	43¾	2¼	1¼	2	101¾	57¾	194¾	34	11¾
International 43-4000 lbs.	4	1¼	1¼	1¼	V	6¾	2½	6½	2½	43¾	1½	F	50¾	2¼	1¼	2	50¾	2¼	1¼	2	109	59¾	202	32¼	11¾
International 63-6000	4	1¼	1¼	1¼	V	9	2½	14½	2	46	1½	F	50¾	2¼	1¼	2	50¾	2¼	1¼	2	116¾	67¾	213¼	34	11¾
International 103	4	1¼	1¼	1¼	V	9	2½	14½	2	51	1½	F	50¾	2¼	1¼	2	50¾	2¼	1¼	2	146	87¾	244	34	12¾
Kelly-Springfield K70-1½-2	4	1¼	1¼	1½	V	12¼	1½	16	1½	41¾	1½	F	17¾	2½	1¼	4	17¾	2½	1¼	4	132	81	230	34	10
Kelly-Springfield K41-3½-5	4	1¼	1¼	1½	V	6¾	1½	24	1½	59¾	1	F	3¾	4½	1¼	12	58	2½	1¼	2	144	87	248	36	9¾
Kelly-Springfield K61-5 to 7	4	1¼	1¼	1½	V	6¾	1½	24	1½	59¾	1	F	3¾	4½	1¼	12	58	2½	1¼	2	144	87	248	36	9¾
Kelly-Springfield K-75-2½	4	1¼	1¼	1½	V	7	1½	13	1½	41¾	1½	F	17¾	2½	1¼	4	17¾	2½	1¼	4	138	85	238	34	9¾
Kelly-Springfield K-76-2½	4	1¼	1¼	1½	V	7	1½	13	1½	41¾	1½	F	17¾	2½	1¼	4	17¾	2½	1¼	4	138	85	238	34	9¾
Kelly-Springfield K100-5	4	1¼	1¼	1½	V	6¾	1½	24	1½	59¾	1	F	23¾	3	1¼	4	23¾	3	1¼	4	144	89	248	36	9¾
Kenworth O-1	4	1¼	1¼	1½	H	12½	1½	18½	1½	31	1½	F	18	2	1¼	4	18	2	1¼	4	120	77¾	207¾	32	10¾
Kenworth M-2	4	1¼	1¼	1½	H	12½	2	17	1½	37	2	F	22¼	2¼	1¼	4	22¼	2¼	1¼	4	122	74	218	32	10¾
Kenworth KS-3	4	1¼	1¼	1½	H	11½	2	17	1½	36	2	F	22¼	2¼	1¼	4	22¼	2¼	1¼	4	136	83	233	34	10¾
Kenworth L-4	4	1¼	1¼	1½	H	11½	2	17	1½	36	2	F	20¾	3½	1¼	4	20¾	3½	1¼	4	150	89	243	36	10¾
Kenworth RS-5	4	1¼	1¼	1½	H	10	2	15	1½	37¾	1½	F	68¾	3	1¼	2	68¾	3	1¼	2	160	96	250	36	10¾
King Zeitler 1	4	1¼	1¼	1½	V	11	1½	16	1½	40	1½	F	11¾	3¼	1¼	4	11¾	3¼	1¼	4	Opt	Opt	Opt	32	10¾
King Zeitler 1½	4	1¼	1¼	1½	V	11	1½	16	1½	40	1½	F	12¾	3¼	1¼	4	12¾	3¼	1¼	4	Opt	Opt	Opt	32	10¾
King Zeitler 2½	4	1¼	1¼	1½	V	12	1½	16	1½	41	1½	F	13¾	3¼	1¼	4	13¾	3¼	1¼	4	Opt	Opt	Opt	32	10
King Zeitler 3½	4	1¼	1¼	1½	V	12	1½	16	1½	42	1½	F	16	3¾	1¼	4	16	3¾	1¼	4	Opt	Opt	Opt	36	10¾
King Zeitler 5	4	1¼	1¼	1½	V	14	2	22	2	42	1½	F	18	4	1¼	4	18	4	1¼	4	Opt	Opt	Opt	36	10¾
Kissel 1 Ton	3	1¼	1¼	1½	V	12¾	1½	10	1½	46¾	2	F	11	3	1¼	4	12	3¼	1¼	4	102	58¾	201	34	10¾
Kissel Utility 1½	3	1¼	1¼	1½	V	12¾	1½	10	1½	46¾	2	F	19	3	1¼	4	12	3¼	1¼	4	120	70¾	219	34	10¾
Kissel Freighter 2	3	1¼	1¼	1½	V	12¾	1½	10	1½	49	2	F	14	3½	1¼	4	14	3½	1¼	4	144	80	243	34	10¾
Kissel Heavy Duty 4	3	1¼	1¼	1½	V	13¾	1½	10	1½	52¼	2	F	56	2½	1¼	2	56	2½	1¼	2	156	94¾	251¼	36	10¾
Kleiber 1½	4	1¼	1¼	1½	V	11	1½	13	1½	45½	1½	F	13	3¼	1¼	4	13	3¼	1¼	4	114	81	238	34	10¾
Kleiber 2½	4	1¼	1¼	1½	V	12	1½	14	1½	47½	1½	F	14	3¼	1¼	4	14	3¼	1¼	4	150	81	238	34	10¾
Kleiber 3½	4	1¼	1¼	1½	V	13	1½	14½	1½	47½	1½	F	16	3¾	1¼	4	16	3¾	1¼	4	156	81	238	34	10¾
Kleiber 5	4	1¼	1¼	1½	V	14	1½	15	1½	48½	1½	F	18	4	1¼	4	18	4	1¼	4	171	81	238	34	10¾
Krebs J-24	4	1¼	1¼	1½	V	8	1½	17	1½	42	1½	F	11¾	2½	1¼	4	11¾	2½	1¼	4	119	64	214	33	10¾
Krebs 50	4	1¼	1¼	1½	V	10	1½	17	1½	42	1½	F	12¾	3¼	1¼	4	12¾	3¼	1¼	4	122	60	222	33	9
Krebs K-45	4	1¼	1¼	1½	V	10	1½	17	1½</																

Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE											BRAKE LINING								FRAME					
	Piston Rings		Carburetor		Vertical or Horizontal	Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length			Width	
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter		Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Front of Chassis
Moreland RR-1	3	1 1/4	1 1/4	1 1/4	V	8	1 1/2	11 1/4	1 1/4	34	1 1/4	F	49	2 1/2	3/4	2	46	2 1/2	3/4	2	108	56 1/2	208 1/2	34	.....
Moreland BX-1 1/2	3	1 1/4	1 1/4	1 1/4	V	8	1 1/2	11 1/4	1 1/4	34	1 1/4	F	12	3 1/4	3/4	4	12	3 1/4	3/4	4	108	56 1/2	208 1/2	34	.....
Moreland EX-2	3	1 1/4	1 1/4	1 1/4	V	9	1 1/2	14	1 1/4	42	1 1/4	F	12	3 1/4	3/4	4	12	3 1/4	3/4	4	132	79 1/2	226 1/2	34	.....
Moreland AX-3	3	1 1/4	1 1/4	1 1/4	V	9	1 1/2	13	1 1/4	42	1 1/4	F	13 1/2	3 1/4	3/4	4	13 1/2	3 1/4	3/4	4	174	101 1/2	253	34	.....
Moreland RX-5	4	1 1/4	1 1/4	1 1/4	V	8	1 1/2	14 1/2	1 1/4	42	2	F	15 1/2	3 1/4	3/4	4	15 1/2	3 1/4	3/4	4	192	115 1/2	271	38	.....
Moreland RC-Bus	3	1 1/4	1 1/4	1 1/4	H	8	1 1/2	13	1 1/4	24	1 1/4	F	49	2 1/2	3/4	2	46	2 1/2	3/4	2	156	100	256	34	.....
Moreland EC-Bus	3	1 1/4	1 1/4	1 1/4	H	8	1 1/2	13	1 1/4	24	1 1/4	F	13 1/2	3 1/4	3/4	4	13 1/2	3 1/4	3/4	4	152	102	254	34	.....
Moreland AC-Bus	3	1 1/4	1 1/4	1 1/4	H	9	1 1/2	13	1 1/4	42	1 1/2	F	15 1/2	3 1/4	3/4	4	15 1/2	3 1/4	3/4	4	171	114 1/4	271	44	.....
Nash 2018-1-1 1/2	4	1 1/4	1 1/4	1 1/4	.....	3	1 1/2	7 1/2	1 1/4	36	1	F	49 1/2	2	3/4	2	20 1/2	2 1/2	3/4	1	104 1/2	61	193	30 1/2	9 1/2
Nash 3018-2-2 1/2	4	1 1/4	1 1/4	1 1/4	.....	3	1 1/2	.....	.....	44	1	F	50 1/2	3	3/4	2	20 1/2	2 1/2	3/4	1	118 1/2	65	207	31 1/2	9 1/2
Nash 4017-2-2 1/2	3	1 1/4	1 1/4	1 1/4	.....	7	1 1/2	.....	.....	44	2	F	49 1/2	2 1/2	3/4	4	25 1/2	2	3/4	1	117 1/2	85 1/2	202 1/2	38 1/2	14 1/2
National M	4	1 1/4	1 1/4	1 1/4	V	16	2 1/2	15	2 1/2	40	1 1/4	F	12	3 1/4	3/4	4	12	3 1/4	3/4	4	116	65	208	34	9 1/2
National T	3	1 1/4	1 1/4	1 1/4	V	12	1 1/2	18	1 1/4	40	1 1/4	F	13 1/2	3 1/4	3/4	4	13 1/2	3 1/4	3/4	4	123 1/2	80 1/2	220	34	9 1/2
National NB-3 1/2	3	1 1/4	1 1/4	1 1/4	V	10	1 1/2	17	1 1/4	40	1 1/4	F	16	3 1/4	3/4	4	16	3 1/4	3/4	4	142	91	243	36	8 1/2
Netco DK-2	3	1 1/4	1 1/4	1 1/4	V	12	1 1/2	16	1 1/4	40 1/2	1 1/4	F	13 1/2	3 1/4	3/4	4	13 1/2	3 1/4	3/4	4	142	94	234 1/2	34 1/2	9
Netco HL-2 1/2-3	3	1 1/4	1 1/4	1 1/4	V	13	1 1/2	16	1 1/4	41 1/4	1 1/4	F	13 1/2	3 1/4	3/4	4	13 1/2	3 1/4	3/4	4	139 1/2	93 1/2	234 1/2	34 1/2	9
Noble A-76-1 1/2	4	1 1/4	1 1/4	1 1/4	V	10	1 1/2	12 1/2	1 1/4	33 1/2	1 1/4	F	47	2 1/2	3/4	2	45	2 1/2	3/4	2	100	58	191	34	.....
Noble A-21-1 1/2	4	1 1/4	1 1/4	1 1/4	.....	10	1 1/2	12 1/2	1 1/4	33 1/2	1 1/4	F	19	2	3/4	2	19	2	3/4	2	102	74	203	34	.....
Noble B-31-2	4	1 1/4	1 1/4	1 1/4	.....	7	1 1/2	16 1/2	1 1/4	34 1/2	1 1/4	F	43	2	3/4	2	43	2	3/4	2	126	80	221	34	.....
Noble D-52-3	4	1 1/4	1 1/4	1 1/4	.....	9	2	12	1 1/4	34 1/2	1 1/4	F	21	2 1/2	3/4	4	21	2 1/2	3/4	4	.....	101	207	34	.....
Noble E-72-4	4	1 1/4	1 1/4	1 1/4	.....	14 1/2	2	16	1 1/4	34 1/2	1 1/4	F	57	2 1/2	3/4	2	57	2 1/2	3/4	2	.....	114	218	36	.....
Northway B-2-2	3	1 1/4	1 1/4	1 1/4	V	5 1/2	2 1/2	13 1/2	1 1/4	46 1/2	1 1/4	V	50 1/2	2 1/2	3/4	2	50 1/2	2 1/2	3/4	2	133	62	223 1/2	33	9
Northway B-3-3 1/2	3	1 1/4	1 1/4	1 1/4	V	5 1/2	2 1/2	13 1/2	1 1/4	46 1/2	1 1/4	V	54	2 1/2	3/4	2	54	2 1/2	3/4	2	173	92	253 1/2	34 1/2	11
Ogden A-2-1	3	1 1/4	1 1/4	1 1/4	H	12	2	6	2	44	3/4	V	11	2 1/2	3/4	4	11	2 1/2	3/4	4	108	56	186	33 1/2	10 1/2
Ogden D-1 1/2	3	1 1/4	1 1/4	1 1/4	V	13	2	12	2	44	3/4	V	10 1/2	3	3/4	4	10 1/2	3	3/4	4	120	.....	.....	33 1/2	.....
Ogden E-2 1/2	3	1 1/4	1 1/4	1 1/4	V	10	1 1/2	14	1 1/4	30	1 1/4	F	52	2 1/2	3/4	1	52	2 1/2	3/4	1	144	.....	.....	33 1/2	.....
Ogden F-3 1/2	3	1 1/4	1 1/4	1 1/4	V	11	1 1/2	16	1 1/4	36	1 1/4	F	15 1/2	3 1/4	3/4	4	15 1/2	3 1/4	3/4	4	168	.....	.....	37	.....
Ogden G-5	3	1 1/4	1 1/4	1 1/4	V	9	2	18	2	40	2	F	11	6	3/4	2	25	4	3/4	2	168	.....	.....	37	.....
Oshkosh AW-2	3	1 1/4	1 1/4	1 1/4	H	16	2	17	2	33 1/2	1 1/4	F	23 1/2	3 1/4	3/4	1	43 1/2	2 1/2	3/4	2	108	75 1/2	189	34	.....
Oshkosh AAW-2	3	1 1/4	1 1/4	1 1/4	H	16	2	17	2	33 1/2	1 1/4	F	23 1/2	3 1/4	3/4	1	43 1/2	2 1/2	3/4	2	144	110 1/2	224	34	.....
Oshkosh BO-2 1/2	4	1 1/4	1 1/4	1 1/4	V	9 1/2	1 1/2	12	1 1/4	36 1/2	2	F	23 1/2	4 1/2	3/4	1	43 1/2	2 1/2	3/4	2	125	85 1/2	211	34	.....
Oshkosh BBO2 1/2	4	1 1/4	1 1/4	1 1/4	V	9 1/2	1 1/2	12	1 1/4	36 1/2	2	F	23 1/2	4 1/2	3/4	1	43 1/2	2 1/2	3/4	2	144	104 1/2	230	34	.....
Overland 1 1/2	4	1 1/4	1 1/4	1 1/4	H	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31 1/2	29	127 1/2	26	9 1/2
Patriot 7R-1	3	1 1/4	1 1/4	1 1/4	H	8	2	9	2	39	3/4	F	40 1/2	1 1/2	3/4	1	40 1/2	1 1/2	3/4	1	93	56	184	33 1/2	11 1/2
Patriot 9-L-2	3	1 1/4	1 1/4	1 1/4	V	6	1 1/2	8	1 1/2	37	1 1/4	F	40 1/2	1 1/2	3/4	1	40 1/2	1 1/2	3/4	1	113	65	207	34	10
Patriot 11W-3	3	1 1/4	1 1/4	1 1/4	V	11	1 1/2	10	2	39	2	F	58	2 1/2	3/4	1	43	2 1/2	3/4	1	150	82	246	34	10
Penn 1	4	1 1/4	1 1/4	1 1/4	H	12	2 1/2	7 1/2	2 1/2	33 1/2	1 1/4	F	40	1 1/2	3/4	4	40	1 1/2	3/4	4	89	52	178	34	9 1/2
Penn 2	3	1 1/4	1 1/4	1 1/4	V	8	2 1/2	8	2 1/2	38	1	F	50 1/2	3	3/4	1	46 1/2	2	3/4	1	124	80	214	38	12
Pierce Arrow XA-2	3	1 1/4	1 1/4	1 1/4	V	16 1/2	2 1/2	14 1/2	2 1/2	43 1/2	1 1/4	F	15 1/2	3 1/4	3/4	4	15 1/2	3 1/4	3/4	4	125 1/2	70 1/2	225	34 1/2	8 1/2
Pierce Arrow XB-3	3	1 1/4	1 1/4	1 1/4	V	16 1/2	2 1/2	14 1/2	2 1/2	43 1/2	1 1/4	F	15 1/2	3 1/4	3/4	4	15 1/2	3 1/4	3/4	4	125 1/2	70 1/2	225	34 1/2	8 1/2
Pierce Arrow WC-4	3	1 1/4	1 1/4	1 1/4	V	11	2 1/2	15 1/2	2 1/2	43 1/2	1 1/4	F	9 1/2	6	3/4	2	18	4 1/2	3/4	4	133 1/2	78 1/2	237	38 1/2	7 1/2
Pierce Arrow RD-5-6	3	1 1/4	1 1/4	1 1/4	V	11	2 1/2	15 1/2	2 1/2	43 1/2	1 1/4	F	9 1/2	6	3/4	2	20 1/2	4 1/2	3/4	4	139 1/2	84 1/2	243	38 1/2	8
Pierce Arrow RF-7 1/2	3	1 1/4	1 1/4	1 1/4	V	11	2 1/2	15 1/2	2 1/2	43 1/2	1 1/4	F	9 1/2	6	3/4	2	20 1/2	4 1/2	3/4	4	139 1/2	84 1/2	243	38 1/2	8
Pierce Arrow XB-TT	3	1 1/4	1 1/4	1 1/4	V	16 1/2	2 1/2	14 1/2	2 1/2	43 1/2	1 1/4	F	17 1/2	3 1/4	3										

Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE										BRAKE LINING								FRAME						
	Piston Rings		Carburetor		Upper Hose		Lower Hose		Fan Belt		Service				Emergency				Length		Width				
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis
Service 25F-1	4	1 1/4	1 1/4	1 1/4	V	12 1/2	1 1/4	10	1 1/4	32 1/2	1 1/4	F	20	2	1 1/4	4	20	2	1 1/4	4	106 1/2	65 1/2	203 1/2	32	7 1/2
Service 34-1 1/2	4	1 1/4	1 1/4	1 1/4	V	8	1 1/4	10	1 1/4	38	1 1/4	V	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	121	82 1/2	216 1/2	34	10 1/2
Service 61-2 1/2	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	10	1 1/4	38	1 1/4	V	13 1/2	3 1/4	1 1/4	4	13 1/2	3 1/4	1 1/4	4	127 1/2	92 1/2	226 1/2	34	10
Service 81-3 1/2	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	11 1/2	1 1/4	40 1/2	1 1/4	V	15 1/2	3 1/4	1 1/4	4	15 1/2	3 1/4	1 1/4	4	144	100 1/2	245 1/2	38	8 1/2
Service 103-5	4	1 1/4	1 1/4	1 1/4	V	10	1 1/4	11 1/2	1 1/4	40 1/2	1 1/4	V	18	4	1 1/4	4	18	4	1 1/4	4	144	100 1/2	245 1/2	38	10
Standard 75-1 1/4	3	1 1/4	1 1/4	1 1/4	V	10 1/2	2 1/4	14 1/4	1 1/4	39 1/4	1 1/4	F	11 1/4	2 1/2	1 1/4	4	11 1/4	2 1/2	1 1/4	4	108	62 1/2	198	32	9 1/4
Standard 1 1/2 K-1-1 1/2	3	1 1/4	1 1/4	1 1/4	V	10 1/2	2 1/4	14 1/4	1 1/4	39 1/4	1 1/4	F	10 1/2	3	1 1/4	4	10 1/2	3	1 1/4	4	120	72 1/2	210	32	9 1/4
Standard 2 1/2 K-2 1/2-3	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	16	1 1/4	40 1/2	1 1/4	F	13 1/4	3 1/4	1 1/4	4	13 1/4	3 1/4	1 1/4	4	132	83	220 1/2	32	12
Standard 3 1/2 K-3 1/2-5	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	16	1 1/4	41 1/2	1 1/4	F	15 1/4	3 1/4	1 1/4	4	15 1/4	3 1/4	1 1/4	4	144	93 1/4	240	38	9 1/4
Standard 5 K-5-7	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	3 1/2	1 1/4	42 1/4	1 1/4	F	17 1/4	4	1 1/4	4	17	4	1 1/4	4	144	93 1/4	244 1/2	38	9
Sterling GB2	6	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	38	1 1/4	F	15 1/4	3 1/4	1 1/4	4	15 1/4	3 1/4	1 1/4	4	.....	.....	287	34	.....
Sterling GB4	6	1 1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	40 1/2	1 1/4	F	15 1/4	3 1/4	1 1/4	4	15 1/4	3 1/4	1 1/4	4	.....	.....	287	34	.....
Sterling GB6	6	1 1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	F	15 1/4	3 1/4	1 1/4	4	15 1/4	3 1/4	1 1/4	4	.....	.....	318	34	.....
Sterling DWS	3	1 1/4	1 1/4	1 1/4	V	11 1/2	1 1/4	.....	.....	.....	.....	F	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	120	70	216	33 1/2	.....
Sterling EW23	3	1 1/4	1 1/4	1 1/4	V	13 1/2	1 1/4	22	1 1/4	40 1/2	1 1/4	F	17 1/4	4	1 1/4	4	17 1/4	4	1 1/4	4	150	91	259	30	.....
Sterling DW10, DW12	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	38	1 1/4	F	11 1/4	3 1/4	1 1/4	4	11 1/4	3 1/4	1 1/4	4	120	70	216	34	.....
Sterling DW14	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	38	1 1/4	F	13 1/4	3 1/4	1 1/4	4	13 1/4	3 1/4	1 1/4	4	138	84	234	34	.....
Sterling EW23	3	1 1/4	1 1/4	1 1/4	V	13 1/2	1 1/4	22	1 1/4	40 1/2	1 1/4	F	17 1/4	4	1 1/4	4	17 1/4	4	1 1/4	4	158	91	259	38	.....
Sterling DWS14, DW16	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	38	1 1/4	F	13 1/4	3 1/4	1 1/4	4	13 1/4	3 1/4	1 1/4	4	138	84	234	34	.....
Sterling EW20	3	1 1/4	1 1/4	1 1/4	V	13 1/2	1 1/4	22	1 1/4	40 1/2	1 1/4	F	15 1/4	3 1/4	1 1/4	4	15 1/4	3 1/4	1 1/4	4	144	85	245	38	.....
Sterling EC23	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	40 1/2	1 1/4	F	56 1/4	4 1/2	1 1/4	2	29 1/4	4	1 1/4	4	158	97	259	38	.....
Sterling EWS25, EW27	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	40 1/2	1 1/4	F	17 1/4	4	1 1/4	4	17 1/4	4	1 1/4	4	158	91	259	38	.....
Sterling ECS24, EC26 & 28	3	1 1/4	1 1/4	1 1/4	V	10	1 1/4	18	1 1/4	40 1/2	1 1/4	F	56 1/4	4 1/2	1 1/4	2	29 1/4	4	1 1/4	4	158	97	259	38	.....
Sterling EC29	3	1 1/4	1 1/4	1 1/4	V	13 1/2	1 1/4	22	1 1/4	40 1/2	1 1/4	F	56 1/4	4 1/2	1 1/4	2	29 1/4	4	1 1/4	4	158	97	259	38	.....
Stewart M15-1 1/4	3	1 1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	41 1/4	2	1 1/4	2	22 1/4	2	1 1/4	1	99 1/2	.....	.....	38	.....
Stewart M9-1 1/2	3	1 1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	48 1/2	2	1 1/4	2	8	5	1 1/4	2	119 1/2	.....	.....	32	.....
Stewart M7X	3	1 1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	50 1/2	2	1 1/4	2	8	5	1 1/4	2	132 1/2	.....	.....	32	.....
Stewart M10X	3	1 1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	60	3	1 1/4	2	8	5	1 1/4	2	138	.....	.....	32	.....
Super Truck 50	3	1 1/4	1 1/4	1 1/4	V	18 1/2	1 1/4	19	1 1/4	37 1/2	1 1/4	F	51 1/4	2 1/4	1 1/4	2	51 1/4	2 1/4	1 1/4	2	135	84	243	36	9 1/2
Super Truck 70	3	1 1/4	1 1/4	1 1/4	V	18 1/2	1 1/4	19	1 1/4	37 1/2	1 1/4	F	55 1/4	2 1/4	1 1/4	2	55 1/4	2 1/4	1 1/4	2	144	97 1/2	249	34	10 1/2
Super Truck 100	3	1 1/4	1 1/4	1 1/4	V	6	1 1/4	19	1 1/4	42	1 1/4	F	68	3	1 1/4	2	51 1/2	3	1 1/4	2	144	97 1/2	249	34	10
Traffic C-4000	3	1 1/4	1 1/4	1 1/4	H	10 1/2	2	10 1/2	2	41 1/4	1 1/4	F	43 1/2	2 1/2	1 1/4	2	38	1 1/4	1 1/4	2	116 1/4	67 1/4	204	34	12
Traffic 6000	3	1 1/4	1 1/4	1 1/4	H	10 1/2	2	10 1/2	2	41 1/4	1 1/4	F	52	3	1 1/4	2	47	2	1 1/4	2	120 1/4	69 1/4	213 1/4	34	11 1/4
Traffic Speedboy	3	1 1/4	1 1/4	1 1/4	H	10 1/2	2	10 1/2	2	41 1/4	1 1/4	F	43 1/2	2 1/2	1 1/4	2	38	1 1/4	1 1/4	2	86	53 1/4	174	34	11 1/4
Transport 15-1	3	1 1/4	1 1/4	1 1/4	H	10 1/2	2	13	2	40 1/2	1 1/4	F	48	2 1/2	1 1/4	2	46 1/2	2 1/4	1 1/4	2	98 1/2	57 1/2	188	34	10
Transport 26-1 1/2	4	1 1/4	1 1/4	1 1/4	V	9 1/4	2	13	1 1/4	34 1/2	1 1/4	F	48 1/2	2 1/2	1 1/4	2	46 1/2	1 1/4	1 1/4	2	113 1/2	70 1/2	201	34	10
Transport 36-2	4	1 1/4	1 1/4	1 1/4	V	10 1/2	2	16	1 1/4	33 1/2	2	F	10 1/4	3 1/2	1 1/4	2	46 1/2	1 1/4	1 1/4	2	120 1/4	72 1/4	210	34	11
Transport 61-3 1/2	4	1 1/4	1 1/4	1 1/4	V	9 1/4	2	16	1 1/4	33 1/2	2	F	11 1/4	3	1 1/4	4	48 1/2	2 1/4	1 1/4	2	127 1/2	78 1/2	218	34	11
Transport 75-5	4	1 1/4	1 1/4	1 1/4	V	12	2	16	1 1/4	35 1/2	2	F	11 1/4	3	1 1/4	4	58	2 1/4	1 1/4	2	150 1/4	93 1/4	251 1/2	36 1/2	10 1/2
Traylor B	4	1 1/4	1 1/4	1 1/4	V	10	2	6	1 1/4	38	1	F	50	2	1 1/4	2	50	2	1 1/4	2	117	75	204 1/4	34	10
Traylor C	4	1 1/4	1 1/4	1 1/4	V	12	2	12	1 1/4	36	2	F	50	2	1 1/4	2	50	2	1 1/4	2	122	73 1/2	218 1/2	34	10 1/2
Traylor D	4	1 1/4	1 1/4	1 1/4	V	12	2	12	1 1/4	36	2	F	56 1/4	2 1/4	1 1/4	2	56 1/4	2 1/4	1 1/4	2	142	76	241 1/2	34	9 1/4
Traylor F	4	1 1/4	1 1/4	1 1/4	V	14	2	14	1 1/4	37	2	F	59	2 1/4	1 1/4	2	59	2 1/4	1 1/4	2	165	92 1/2	273 1/2	35	11
Union FW-2>																									

Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE										BRAKE LINING				FRAME			
	Piston Rings		Carburetor		Upper Hose		Lower Hose		Fan Belt		Service		Emergency		Length		Width	
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat
White 20-D-2.....	3	1 1/4	1 1/4	1 1/4	V	7 1/4	1 1/4	7 1/4	1 1/4	38 3/4	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	98
White 20-45-2.....	3	1 1/4	1 1/4	1 1/4	V	12 3/4	1 1/4	12 3/4	1 1/4	41	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	107 1/2
White 50A-Bus.....	3	1 1/4	1 1/4	1 1/4	V	12 3/4	1 1/4	12 3/4	1 1/4	46	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	185
White 40-3 1/2.....	3	1 1/4	1 1/4	1 1/4	V	12 3/4	1 1/4	12 3/4	1 1/4	46	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	104
White 40-D-3 1/2.....	3	1 1/4	1 1/4	1 1/4	V	12 3/4	1 1/4	12 3/4	1 1/4	46	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	119
White 45-5.....	3	1 1/4	1 1/4	1 1/4	V	12 3/4	1 1/4	12 3/4	1 1/4	46	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	164
White 45-D-5.....	3	1 1/4	1 1/4	1 1/4	V	12 3/4	1 1/4	12 3/4	1 1/4	46	1 1/4	F	55 7/8	3 1/2	1 1/4	2	50 7/8	119
Willcox AA-1.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	96
Willcox B-1 1/2.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	132
Willcox C-2 1/2.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	141
Willcox E-3 1/2.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	156
Willcox F-5.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	148 1/2
Witt-Will P-2.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	78
Witt-Will SS-3.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	108
Witt-Will N-1 1/2.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	137
Witt-Will S-2 1/2.....	3	1 1/4	1 1/4	1 1/4	V	8	1 1/4	12	1 1/4	31	1 1/4	F	47 1/2	3 1/2	1 1/4	2	33 3/4	137
Yellow Cab M22.....	3	1 1/4	1 1/4	1 1/4	V	8 1/4	2	10 1/4	2	38 1/4	3/4	V	49	2 1/2	1 1/4	2	45	60
Yellow Cab M42-1 1/2.....	3	1 1/4	1 1/4	1 1/4	V	8 1/4	2	10 1/4	2	38 1/4	3/4	V	21 1/4	3	1 1/4	3	11	92
Yellow Cab Express T1.....	3	1 1/4	1 1/4	1 1/4	V	9 1/2	2	9 1/2	2	39 1/4	3/4	V	21 1/4	3 1/2	1 1/4	4	11 1/2	94 1/2

Electric Commercial Cars

Name and Model Number	Total Weight Resting on Four Tires	Chassis Weight—Exclusive of Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Autocar E 1F.....	10000	3650	.....	.....	2400	.....	A	.....	G-E	G-E	5	R	Own	Row	34x4	34x5	Ross	107	60
Autocar E 2D.....	15000	4300	.....	.....	2800	.....	A	.....	G-E	G-E	5	R	Own	Row	34x5	34x6	Ross	120	60
Autocar E 3H.....	18000	4900	.....	.....	3200	.....	A	.....	G-E	G-E	5	R	Own	Row	34x5	36x8	Ross	131	60
Autocar E 4Y.....	26000	6800	.....	.....	4000	.....	A	.....	G-E	G-E	5	R	Own	Row	34x6	36x8	Ross	138	60
Autocar E 5M.....	30000	7200	.....	.....	4300	.....	A	.....	G-E	G-E	5	R	Own	Row	36x7	36x7	Ross	138	60
C-T H-1.....	5600	2400	.....	.....	.....	14	A	55	Own	Own	4	Own	F	Shel	36x3	36x3 1/2	W	108	68
C-T F-1.5.....	6600	2860	.....	.....	.....	14	A	60	Own	Own	4	Own	F	Shel	36x3	36x4	W	94	65
C-T H-1.5.....	6600	2800	.....	.....	.....	14	A	60	Own	Own	4	Own	F	Shel	36x3	36x4	W	116	71
C-T F-2.....	8000	3100	.....	.....	.....	14	A	50	Own	Own	4	Own	F	Shel	36x3 1/2	36x5	W	96	66
C-T H-2.....	8000	3100	.....	.....	.....	14	A	50	Own	Own	4	Own	F	Shel	36x3 1/2	36x5	W	124	70
C-T F-4.....	11950	4200	.....	.....	.....	12	A	50	Own	Own	4	Own	F	Shel	36x4	36x4 1/2	W	116	68
C-T A-7.....	17700	5800	.....	.....	.....	11	A	45	Own	Own	4	Own	D	Shel	36x6	36x4 1/2	W	122	60
C-T F-7.....	17900	6000	.....	.....	.....	11	A	45	Own	Own	4	Own	F	Shel	36x5	36x5 1/2	W	136	68
C-T A-10.....	22250	6500	.....	.....	.....	10	A	45	Own	Own	4	Own	D	Shel	36x7	36x5 1/2	W	132	59
C-T F-10.....	22750	7000	.....	.....	.....	10	A	45	Own	Own	4	Own	F	Shel	36x6	36x6 1/2	W	152	68
Kelland AT.....	1950	1000	1500	.....	.....	15	S	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102	60
Kelland BT.....	2050	1500	2000	.....	.....	15	S	50	G-E	G-E	4	R	Flot	Mer	34x3 1/2	34x3 1/2	Ross	102	60
Kelland CT.....	2150	2000	2500	.....	.....	15	S	50	G-E	G-E	4	R	Flot	Mer	34x3 1/2	34x4	Ross	102	60
Kelland AH.....	2500	1000	1500	.....	.....	15	A	45	G-E	G-E	4	C	D	Mer	36x3	36x3	Hin	106	60
Kelland BH.....	2600	1500	2000	.....	.....	15	A	45	G-E	G-E	4	C	D	Mer	36x3 1/2	36x3 1/2	Hin	106	60
Kelland CH.....	2700	2000	2500	.....	.....	15	A	45	G-E	G-E	4	C	D	Mer	36x3 1/2	36x4	Hin	106	60
Kelland ATS.....	2200	1000	1500	.....	.....	15	H&S	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102	60
Kelland BTS.....	2300	1500	2000	.....	.....	15	H&S	50	G-E	G-E	4	R	Flot	Mer	34x3 1/2	34x3 1/2	Ross	102	60
Kelland CTS.....	2400	2000	2500	.....	.....	15	H&S	50	G-E	G-E	4	R	Flot	Mer	34x3 1/2	34x4	Ross	102	60
Lansden Century.....	1700	.....	1250	1600	15	S	60	G-E	Own	Own	4	R	Flot	SP	32x4 1/2	32x4 1/2	Ross	108	50
Lansden Century.....	1950	.....	2000	1850	15	S	60	G-E	Own	Own	4	R	Flot	SP	33x5	33x5	Ross	112	50
Lansden Marathon.....	2900	.....	2000	1850	14	A	50	G-E	Own	Own	4	C	D	SP	36x3 1/2	36x4	Bay	108	60
Lansden Marathon.....	4400	.....	4000	2250	13	A	50	G-E	Own	Own	4	C	D	SP	36x4	36x3 1/2	Bay	120	60
Lansden Marathon.....	5700	.....	7000	2950	11	A	45	G-E	Own	Own	4	C	D	SP	36x5	36x5 1/2	Bay	133	60
Lansden Marathon.....	7500	.....	10000	3350	10	A	40	G-E	Own	Own	4	C	D	SP	36x6	36x6 1/2	Bay	146	60
O. B-B.....	.....	.....	.....	.....	.....	13	.....	G-E	Own	Own	4	C	D	.....	36x4	36x3 1/2	Own	107	.....
O. B-C.....	.....	.....	.....	.....	.....	11	.....	G-E	Own	Own	4	C	D	.....	36x5	36x4	Own	135	.....
O. B-D.....	.....	.....	.....	.....	.....	10	.....	G-E	Own	Own	4	C	D	.....	36x6	36x5 1/2	Own	143	.....
Steinmetz 15.....	6800	2200	1000	2250	1800	18	H&S	60	Own	Own	4	R	Own	Lig	32x4 1/2	32x4 1/2	Lav	114	55
Walker 12.....	1900	.....	1000	.....	.....	15	H&S	50	G-E	Own	4	.....	.....	Tim	32x3	32x3 1/2	Ross	104	66
Walker 15.....	2800	.....	1500	.....	.....	14	A	50	West	West	5	Own	Own	Math	34x3	36x3 1/2	Ross	94	66
Walker 22.....	3000	.....	2000	.....	.....	13	A	50	West	West	5	Own	Own	Math	34x3 1/2	36x4	Ross	101	66
Walker 42.....	4200	.....	4000	.....	.....	13	A	50	West	West	5	Own	Own	Math	36x4	36x6	Ross	114	66
Walker P.....	6000	.....	7000	.....	.....	11	A	40	West	West	5	Own	Own	Math	36x5	38x5 1/2	Ross	131	66
Walker N.....	6700	.....	10000	.....	.....	10	A	40	West	West	5	Own	Own	Math	36x6	38x6 1/2	Ross	141	66
Walter HD.....	6800	2300	.....	2000	2200	16	A	60	Diehl	G-E	5	B	.....	.....	32x3 1/2	32x4	Ross	98	60
Walter EN.....	13200	4400	.....	5000	3100	15	A	50	G-E	G-E	5	Own	D	.....	36x4	36x7	Gem	114	60
Walter EL.....	16800	5000	.....	7000	3700	13 1/2	A	50	G-E	G-E	5	Own	D	.....	36x5	36x4	Gem	132	60
Walter ES.....	23600	7200	.....	11000	4500	12	A	50	G-E	G-E	5	Own	D	.....	36x6	40x6	Ross	150	70
Walter ER.....	28400	7500	.....	15000	4900	11	A	50	G-E	G-E	5	Own	D	.....	36x7	40x7	Ross	150	70
Ward A211.....	4650	1800	600	1150	.....	15	S	75	G-E	Own	4	W	Shel	Shel	32x3	32x3 1/2	Own	88	56
Ward B-222.....	6000	2300	1010	1700	.....	14	S	84	G-E	Own	4	W	Shel	Shel	32x3 1/2	32x4	Own	91	63
Ward C-211.....	8000	2670	2170	2880	.....	13	S	65	G-E	Own	4	W	Shel	Shel	32x3 1/2	34x5	Own	96	64
Ward E-211.....	12000	3570	4480	5430	.....	12 1/2	S	56 1/2	G-E	Own	4	W	Shel	Shel	34x4	36x6	Own	108	65
Ward G-211.....	16600	4500	6560	7760	.....	11	S	44	G-E	Own	5	W	Shel	Shel	36x5	36x8	Own	120	68
Ward J-211.....	22500	6630	9500	11200	.....	10	S	39 1/2	G-E	Own	5	W	Shel	Shel	36x6	36x10	Own	136	70
Ward M-211.....	30000	8430	13780	15920	.....	9	S	36	G-E	Own	5	W	Shel	Shel	36x7	36x7 1/2	Own	152	71

NOTE: Battery Equipment on all above makes is at the option of the purchaser. Battery Location Abbreviations: A-amidships; H-under hood; and S-under seat

Manufacturers and Models Included in the Specification Tables

List Includes Manufacturers of Buses and Electric Trucks

Width	Trade Name	Capacity	Name	Address	How Manufacturer Sells				
					Nation-ally	Locally	Branches	Distribu-tors	Dealers
Over All	Ace	2½-Bus	American Motor Truck Co.	Newark, Ohio	.....	Yes	.....	.....	.....
Clearance at front	Acme	1, 1½, 2, 3, 5, 6½-Bus	Acme Motor Truck Co.	Cadillac, Mich.	Yes	No	No	Yes	Yes
Clearance at rear	Acorn	2½, 4	Acorn Motor Truck Co.	Chicago, Ill.	No	Yes	No	No	No
34	American-La France	2½, 3½, 5, 6, 7-T. T.	American-La France Fire Engine Co.	Elmira, N. Y.	Yes	.....	Yes	No	Yes
34 1/2	Armleder	1½, 2½, 3½ T. T.	O. Armleder Motor Truck Co.	Cincinnati, Ohio	Yes	.....	1-N. Y. State only	.....	.....
42 1/2	Atterbury	1½, 2½, 3½, 5	Atterbury Motor Car Co.	Buffalo, N. Y.	Yes	No	No	Yes	Yes
42 1/2	Autocar	1, 1½, 1½, 2, 2½, 3, 5, T. T.	Autocar Co.	Ardmore, Pa.	Yes	.....	Yes	.....	Yes
42 1/2	Available	1, 1½, 2, 2½, 3½, 4, 5	Available Truck Co.	Chicago, Ill.	No	Yes	No	.....	.....
34	Bessemer	1, 1½, 2½	Bessemer Motor Truck Co.	Plainfield, N. J.	.....	.....	.....	.....	.....
33	Bethlehem	1, 2, 2½, 3½	Bethlehem Motors Corp.	Allentown, Pa.	.....	.....	.....	.....	.....
33	Betz	1, 2½	Betz Motor Truck Co.	Hammond, Ind.	No	Yes	.....	No	No
36	Biederman	1, 1½, 1½, 2½, 3½, 5	Biederman Motors Co.	Cincinnati, Ohio	.....	.....	.....	.....	.....
32	Bridgeport	1½, 2½, 4-Bus	Bridgeport Motor Truck Corp.	Stratford, Conn.	Yes	Yes	Yes	Yes	Yes
32	Brinton	1½, 2½	Brinton Motor Truck Co.	Philadelphia, Pa.	.....	.....	.....	.....	.....
32	Brockway	1½, 2, 3, 4, 5-Bus	Brockway Motor Truck Corp.	Cortland, N. Y.	Yes	.....	Yes	Yes	Yes
43	C. T. Elec.	½, ¾, 1, 2, 3, 3½, 5	Commercial Truck Co.	Philadelphia, Pa.	Yes	No	Yes	Yes	Yes
32 1/2	Casco	1, 2	Casco Motors, Inc.	Sanford, Me.	No	Yes	.....	.....	.....
34 1/2	Chevrolet	½, 1	Chevrolet Motor Co.	Detroit, Mich.	.....	.....	.....	.....	.....
.....	Clinton	1½, 2, 3, 4, 5 to 7-Bus	Clinton Motors Corp.	Reading, Pa.	.....	.....	.....	.....	.....
.....	Clydesdale	1½, 1½, 2, 2½, 3, 3½, 5	Clydesdale Motor Truck Co.	Clyde, Ohio.	Yes	No	No	Yes	Yes
.....	Commerce	1½, 2, 2½-Bus	Commerce Motor Truck Co.	Ypsilanti, Mich.	Yes	No	No	Yes	Yes
.....	Concord	1½, 2, 2½, 3	Abbott-Downing Truck & Body Company	Concord, N. H.	.....	.....	.....	.....	.....
.....	Corbitt	1½, 2, 2½, 3, 4, 5	Corbitt Motor Truck Co.	Henderson, N. C.	Yes	.....	.....	Yes	Yes
.....	Day-Elder	1½, 2, 2½, 3, 4, 5, Bus.	Day-Elder Motors Corp.	Newark, N. J.	Yes	.....	.....	Yes	Yes
.....	Defiance	1½	Century Motor Truck Co.	Defiance, Ohio	Yes	No	Yes	Yes	Yes
.....	Denby	1½, 2, 2½, 3, 4, 5-Bus	Denby Motor Truck Corp.	Detroit, Mich.	.....	No	Yes	.....	.....
.....	Diamond T	1, 1½, 1½, 2½, 3½, 5	Diamond T Motor Car Co.	Chicago, Ill.	Yes	No	Yes	Yes	Yes
.....	Dixon	1½, 2, 2½, 3½, 5	Dixon Motor Truck Co.	Altoona, Pa.	.....	Yes	.....	.....	.....
.....	Dodge Brothers	¾	Dodge Brothers, Inc.	Detroit, Mich.	.....	.....	.....	.....	.....
.....	Dorris	1, 2½, 3½-Bus	Dorris Motor Car Co.	St. Louis, Mo.	.....	.....	.....	.....	.....
.....	Double Drive	3	Double Drive Truck Co.	Benton Harbor, Mich.	.....	.....	.....	.....	.....
.....	Duplex	1, 1½, 2, 3, 3½-Bus	Duplex Truck Co.	Lansing, Mich.	Yes	.....	No	.....	Yes
60	Eagle	1½, 2½	Eagle Motor Truck Corp.	St. Louis, Mo.	.....	.....	.....	.....	.....
60	F. W. D.	3	Four-Wheel Drive Auto Co.	Clintonville, Wis.	Yes	.....	Yes	.....	Yes
60	Fageol	2, 3, 4, 6-Bus	Fageol Motors Co.	Oakland, Cal.	Yes	No	.....	.....	.....
60	Federal	1, 1½, 1½, 2½, 4, 5-Bus, T. T.	Federal Motor Truck Co.	Detroit, Mich.	.....	.....	.....	.....	.....
71	Fifth Avenue	Bus	Fifth Avenue Coach Co.	New York City	.....	.....	.....	.....	.....
70	Fisher Fast Freight	1½	Standard Motor Truck Co.	Detroit, Mich.	Yes	No	No	Yes	Yes
68	Flint Road King	1½-Bus	Flint Motor Co.	Flint, Mich.	Yes	.....	Yes	Yes	Yes
59	Ford	1	Ford Motor Co.	Highland Park, Mich.	Yes	No	Yes	No	Yes
68	Front Drive	1½	Double Drive Truck Co.	Benton Harbor, Mich.	.....	.....	.....	.....	.....
60	G. M. C.	1, 1½, 2½, 3½, 5-T. T.	General Motors Truck Co.	Pontiac, Mich.	Yes	No	Yes	Yes	Yes
60	Garford	1, 1½, 2½, 4, 5, 7½ T. T. Bus	Garford Motor Truck Co.	Lima, Ohio	.....	.....	.....	.....	.....
60	Gary	1, 2½, 3, 3½, 5-Bus	Gary Motor Corp.	Gary, Ind.	Yes	Yes	No	Yes	.....
50	Gotfredson	1, 1½, 2, 3, 4, 5	Gotfredson Truck Corp.	Detroit, Mich. & Walkerville, Ont.	Yes	.....	Yes	Yes	.....
60	Graham Bros.	1, 1½-Bus	Graham Brothers	Detroit, Mich.	.....	.....	.....	.....	Yes
60	Gramm-Bernstein	1, 1½, 1½, 2½, 3, 4, 5	Gramm-Bernstein Motor Truck Co.	Lima, Ohio	.....	.....	.....	.....	.....
55	Gramm & Kincaid	1, 1½, 2, 2½, 3, 4	Gramm & Kincaid Motors, Inc.	Lima, Ohio	.....	.....	.....	.....	.....
66	Grass Premier	1, 1½, 2, 2½, 3½-Bus	Grass Premier Truck Co.	Sauk City, Wis.	No	Yes	No	No	No
66	Gullder	1½, 1½, 2, 3, 4, 5, 6-Bus	Gullder Engineering Co.	Poughkeepsie, N. Y.	.....	.....	.....	.....	.....
68	Hahn	1½, 1½, 2, 2½, 3, 5	Hahn Motor Truck Co.	Hamburg, Pa.	Yes	Yes	.....	.....	.....
60	Harvey	2½, 3½, Bus	Harvey Motor Truck Co.	Harvey, Ill.	No	Yes	Yes	No	No
70	Hug	1, 1½, 2	Hug Company	Highland, Ill.	Yes	.....	.....	Yes	.....
56	Indiana	1, 1½, 2, 2½, 3½, 5	Indiana Truck Corp.	Marion, Ind.	Yes	Yes	Yes	Yes	Yes
62	International	1, 1½, 2, 3, 5-Bus	International Harvester Co. of America	Chicago, Ill.	.....	.....	.....	.....	.....
64	Kearns	1½, 2, 2½, 3½, 5	Kearns Duglie Motors Co.	Lewistown, Pa.	.....	.....	.....	.....	.....
65	Kelland (Elec.)	½, ¾, 1	Kelland Motor Car Co.	Newark, N. J.	No	Yes	No	No	No
70	Kelly-Springfield	1½, 2½, 3½-5-7	Kelly-Springfield Motor Truck Co.	Springfield, Ohio	Yes	No	Yes	Yes	Yes
71	Kenworth	1, 1½, 2, 3, 4, 5	Kenworth Motor Truck Corp.	Seattle, Wash.	No	Yes	No	.....	Yes
.....	King Zeitler	1, 1½, 2½, 3½, 5	King Zeitler Co.	Chicago, Ill.	.....	.....	.....	.....	.....

Trade Name	Capacity	Name	Address	How Manufacturer Sells				
				Nation-ally	Locally	Branches	Distribu-tors	Dealers
Kissel	1, 1½, 4, 5 Bus	Kissel Motor Car Co.	Hartford, Wis.	Yes	.....	No	Yes	Yes
Kleiber	1, 1½, 2½, 3½, 5	Kleiber Motor Truck Co.	San Francisco, Cal.	.....	.....	.....	.....	.....
Krebs	1½, 2, 2½, 3, 4, 5, 7½	Krebs Motor Truck Co.	Bellevue, Ohio	Yes	No	No	Yes	Yes
Lange	1½, 2½, 3½	Lange Motor Truck Co.	Pittsburgh, Pa.	.....	.....	.....	.....	.....
Lansden (Elec.)	¾, 1, 2, 3½, 5, 6	Lansden Company	Danbury, Conn.	Yes	.....	1-N. Y. State only	Yes	Yes
Larrabee-Deyo	¾, 1½, 1½, 2½, 2½, 3½-Bus	Larrabee-Deyo Motor Truck Co., Inc.	Binghamton, N. Y.	.....	.....	.....	.....	.....
LeMoon	1, 1½, 2, 2½, 3½, 5	Nelson & Le Moon Truck Co.	Chicago, Ill.	.....	.....	.....	.....	.....
Luedinghaus	1, 1½, 2½, 3½, 5	Luedinghaus-Espenschied Wagon Co.	St. Louis, Mo.	.....	.....	.....	.....	.....
Maccar	1½, 2, 3, 4, 5	Maccar Truck Co.	Scranton, Pa.	No	Yes	4	Yes	Yes
Mack	1½, 2, 2½, 3½, 5, 6½, 7½-Bus	International Motor Co.	New York, N. Y.	Yes	.....	86	.....	Yes
Master	1½, 1½, 2½, 3, 3½, 4, 5, 5½-Bus	Master Motor Truck Mfg. Co.	Chicago, Ill.	.....	.....	.....	.....	.....
Menominee	1, 1½, 1½, 2½	Menominee Motor Truck Co.	Clintonville, Wis.	.....	.....	.....	.....	.....
Moreland	1, 1½, 2, 2½, 3, 3½, 5	Moreland Motor Truck Co.	Burbank, Cal.	.....	.....	.....	.....	.....
Nash	1, 2	Nash Motors Co.	Kenosha, Wis.	Yes	No	No	Yes	Yes
National	2, 3, 3½	National Steel Car Corp., Ltd.	Hamilton, Ont., Canada	Yes	No	2	No	Yes
Noble	1, 1½, 2, 2½, 3, 3½, 4	Noble Motor Truck Co.	Kendallville, Ind.	No	No	No	Yes	Yes
Northway	1½, 3, 5	Northway Motors Corp.	Natick, Mass.	.....	.....	.....	.....	.....
O. B. (Elec.)	2, 3½, 5	O. B. Electric Vehicles, Inc.	Long Island City, N. Y.	.....	.....	.....	.....	.....
O. K.	1, 1½, 2, 2½, 3½	Nolan Truck Co.	Okay, Okla.	.....	.....	.....	.....	.....
Ogden	1, 1½, 2½, 3½, 5	Ogden Truck Co.	Chicago, Ill.	.....	.....	.....	.....	.....
Oshkosh	2, 2½, 4	Oshkosh Motor Truck Mfg. Co.	Oshkosh, Wis.	.....	Yes	No	.....	Yes
Overland	½	Willys-Overland Co.	Toledo, Ohio.	Yes	Yes	24	Yes	Yes
Patriot	1½, 2, 3	Patriot Mfg. Co.	Havelock, Neb.	Yes	No	No	Yes	Yes
Penn	1, 2	Penn Motors Corp.	Philadelphia, Pa.	.....	.....	.....	.....	.....
Pierce-Arrow	2, 3, 4, 5, 6, 7½, T. T.	Pierce-Arrow Motor Car Co.	Buffalo, N. Y.	Yes	No	.....	Yes	Yes
Rainier	¾, 1, 1½, 2, 2½, 3½, 6	Rainier Trucks, Inc.	Long Island City, N. Y.	No	Yes	No	Yes	Yes
Rehberger	2, 3, 4, 5	Arthur Rehberger & Son, Inc.	Newark, N. J.	No	Yes	No	.....	.....
Reo	1½-Bus	Reo Motor Car Co.	Lansing, Mich.	.....	.....	.....	.....	.....
Republic	1½, 1½, 2, 3, 4	Republic Motor Truck Co., Inc.	Alma, Mich.	Yes	No	No	Yes	Yes
Rowe	2½, 3, 4, 5	Rowe Motor Mfg. Co.	Lancaster, Pa.	.....	.....	.....	.....	.....
Ruggles	1, 1½, 1½, 2, 2½, 3-Bus	Ruggles Motor Truck Co.	Saginaw, Mich.	.....	.....	.....	.....	.....
Rumely	1½	Advance Rumely Thresher Co.	Laporte, Ind.	Yes	No	30	Yes	Yes
Safeway Six	Bus	The Six Wheel Co.	Philadelphia, Pa.	Yes	.....	.....	.....	.....
Wheeler	1, 1½, 2, 2½, 3½, 5	Sandow Motor Truck Co.	Chicago Heights, Ill.	Yes	No	.....	.....	.....
Sandow	1, 1½, 2½, 3½, 5	Sanford Motor Co.	Syracuse, N. Y.	Yes	.....	.....	Yes	.....
Sanford	6½, T. T.	Adolph Saurer, Inc.	New York, N. Y.	.....	Yes	Yes	No	Yes
Saurer	1, 1½, 2, 2½, 3, 3½, 4, 5-Bus	G. A. Schacht Motor Truck Co.	Cincinnati, Ohio.	Yes	.....	Yes	.....	Yes
Schacht	1½, 2, 2½, 3, 3½, 4, 5-Bus	Selden Truck Corp.	Rochester, N. Y.	Yes	No	Yes	Yes	Yes
Selden	1½, 2, 2½, 3, 3½, 4, 5-Bus	Service Motors, Inc.	Wabash, Ind.	Yes	.....	Yes	Yes	Yes
Service	1, 1½, 2½, 3½, 5	Standard Motor Truck Co.	Detroit, Mich.	Yes	No	No	Yes	Yes
Standard	1½, 1½, 2½, 3½, 6	Steinmetz Electric Motor Car Corp.	Arlington, Baltimore, Md.	Yes	.....	.....	Yes	Yes
Steinmetz (Elec.)	1, 1½, 2, 2½, 3, 3½, 5, 6, 10, T. T.-Bus	Sterling Motor Truck Co.	Milwaukee, Wis.	Yes	.....	Yes	Yes	Yes
Sterling	1, 1½, 2, 2½, Bus	Stewart Motor Corp.	Buffalo, N. Y.	Yes	.....	Yes	Yes	Yes
Stewart	1, 1½, 2, 2½, 3½, 4	Stoughton Wagon Co.	Stoughton, Wis.	.....	.....	.....	.....	.....
Stoughton	1½, 1½, 2, 3, 2½, 3, 3½, 5	O'Connell Motor Truck Co.	Waukegan, Ill.	No	Yes	No	No	No
Super Truck	1½, 2, 3	Traffic Motor Truck Corp.	St. Louis, Mo.	.....	.....	.....	.....	.....
Traffic	1½, 3, 5	Traylor Eng. & Mfg. Co.	Allentown, Pa.	.....	.....	.....	.....	.....
Traylor	2½, 3½-Bus	Minneapolis Steel & Machinery Co.	Minneapolis, Minn.	Yes	No	Yes	Yes	Yes
Twin City	1½, 2, 3	United States Motor Truck Co.	Cincinnati, Ohio	.....	.....	.....	.....	.....
U. S.	1½, 1½, 2, 2½, 3, 4, 5-7	Union Motor Truck Co.	Bay City, Mich.	Yes	Yes	.....	.....	Yes
Union	1½, 2½, 4, Bus	United Motor Products Co.	Grand Rapids, Mich.	Yes	.....	Yes	Yes	Yes
United	1, 1½, 1½, 2, 2½, 3, 5	Aeromarine Plane & Motor Co., Inc.	Keyport, N. J.	.....	.....	.....	.....	.....
Uppercu	Bus	Victor Motors, Inc.	St. Louis, Mo.	.....	.....	.....	.....	.....
Victor	1½, 1½, 2, 2½, 3½, 5, 6	Wachusett Motors, Inc.	Fitchburg, Mass.	.....	Yes	.....	.....	.....
Wachusett	1, 1½, 2, 2½	Walker Vehicle Co.	Chicago, Ill.	.....	.....	.....	.....	.....
Walker (Elec.)	½, ¾, 1, 2, 3½, 5	Walter Motor Truck Co.	Long Island City, N. Y.	Yes	Yes	.....	Yes	.....
Walter (Elec.)	T. T.	Ward Motor Vehicle Co.	Mt. Vernon, N. Y.	Yes	.....	Yes	Yes	Yes
Ward (Elec.)	750 lbs. to 7 ton	Ward La France Truck Corp.	Elmira, N. Y.	Yes	No	Yes	.....	Yes
Ward La France	2½, 3½, 5, 7-Bus	White Co.	Cleveland, Ohio	.....	.....	.....	.....	.....
White	¾, 2, 2½, 3½, 5-Bus	Wilcox Trux, Inc.	Minneapolis, Minn.	.....	.....	.....	.....	.....
Wilcox	1, 1½, 2½, 3½, 5	Winther Motor Co.	Kenosha, Wis.	.....	.....	.....	.....	.....
Winther	1½, 2½, 3, 3½, 5, 7	Witt Will Co., Inc.	Washington, D. C.	No	Yes	No	No	No
Witt Will	1½, 2, 2½, 3, 4, 5	Yellow Cab Mfg. Co.	Chicago, Ill.	.....	.....	.....	.....	.....
Yellow Cab	¾, 1-Bus							

Fleetwood Body Purchased by Fisher

Purchase of the Fleetwood Metal Body Company, Fleetwood, Pa., by the Fisher Body Corporation, is announced by W. A. Fisher, president of the Fisher Body Corporation. The shops will be maintained at Fleetwood under the direction of Ernst Schebera. The purchase brings about the retirement of Harry C. Urich, who founded the company.

Except for a few minor changes, the policies of the Fleetwood company will be followed. It is believed that jobs calling for individuality to suit the taste as outlined by the purchaser will be completed here.

In purchasing the company, Mr. Fisher said that his company had but one object in view and that was to preserve the finest traditions of hand-craftsmanship to be found in the United States.

The Fisher Body Corporation has also taken over two plants of the Buick Motor Car Company, in Detroit.

Stockholders to Vote on Yellow Merger

Yellow Cab Stockholders will meet on August 18, at Portland, Me., to ratify the plans for consolidation of the Yellow Cab Manufacturing Co., and the General Motors truck division. A two-thirds vote will be necessary for approval.

Engineers representing the Yellow Cab

and Coach Companies are at present in Pontiac, Mich., conducting a survey of the General Motors Truck properties in that city.

Proxies are now being prepared for mailing to stockholders. John Hertz, who is to be chairman of the board of the new corporation, expresses the opinion that the stockholders are overwhelmingly in favor of the consolidation. He feels that the amalgamation of the two interests will prove of benefit to stockholders of both companies as well as to the public.

Garage for Bus and Truck Use Only

Boston is erecting its first garage for the sole use of buses and trucks. It will be located in the business district just on the edge of the big retail department store section. It is planned to accommodate operators of buses running between Boston and out of town places and also trucks used in long hauls. At present the big increase in bus operation has been such that it is difficult to house them near their terminals. The new garage will accommodate 400 buses and trucks.

It will be a two-story brick and concrete structure, 140 ft. by 290 ft. It will cover more than 26,000 square feet, giving double that area with its two floors, and allowing for additions when business warrants it. A ramp 110 feet in length will lead from the first to the second story providing an easy grade.

Among the features will be the partitioning off of sections to be assigned to fleet owners, and the construction of special repair rooms. There will be lockers and shower baths for drivers and helpers. The owners are T. J. Moynahan, Jr., and Albert Erlandson.

New York Suburban Railroads Run Buses

Several New York suburban towns in Westchester County will be linked in a \$1,000,000 motor bus system being planned by the New York, Westchester & Boston and the New York, New Haven & Hartford Railroads. Financial failure is said to be the reason for the new move. The latter company is now in the hands of a receiver and has been forced to discontinue several of its lines in favor of buses which have proved more practical and less costly on many suburban routes.

Residents of the county favor the institution of the bus service. The project of the two railroads adds another competitor to bus operations in Westchester. The Third Avenue Railway Co., and the Westchester Bus Co., are already running bus lines in the county. L. S. Miller, president of the New York, Westchester & Boston road, in commenting on the bus plans stated that it would enable the railroad to give commuters quicker service to New York and would permit the railroad to offer better service to newly developed suburban communities.

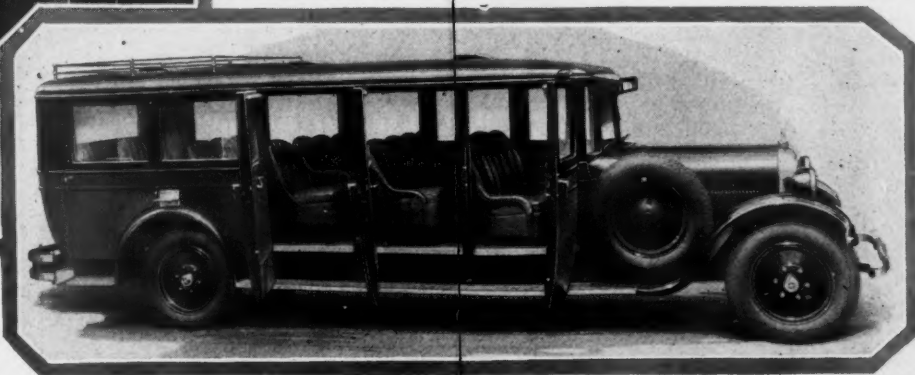
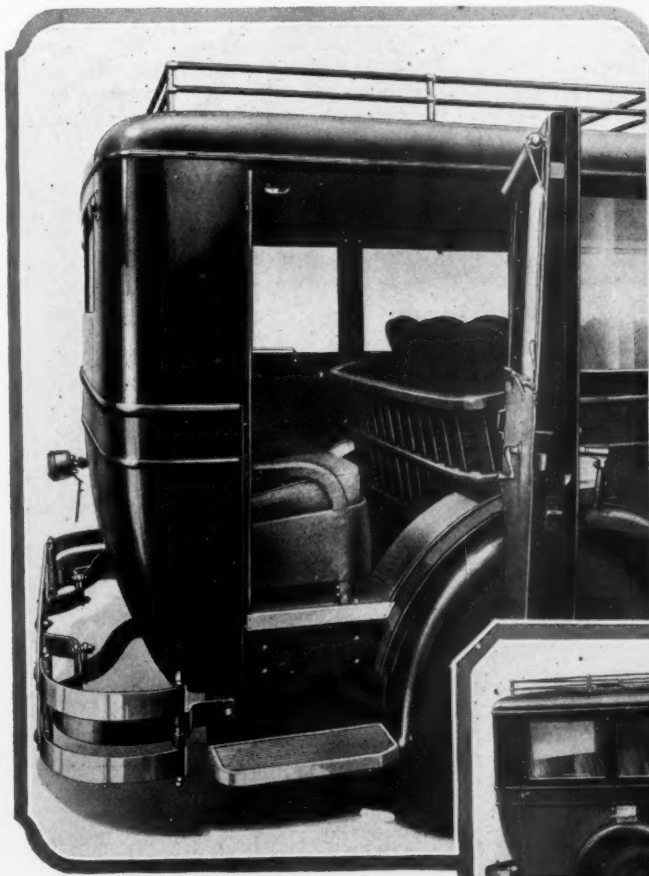
Automobiles Shipped to All Parts of Globe

Showing how the world is riding in American motor vehicles, it is worth noting that during the past five months sixteen motor trucks were shipped to Greenland and seven passenger cars to Iceland, while Belgian Congo, in the heart of Africa, took twenty-nine passenger cars and eighty-seven trucks.

Bearing & Rim Supply Company, Spokane, Washington, and Wire Wheel & Service Company, Portland, Oregon, Budd wheel distributors in western Washington and Portland respectively, announce that they have expanded their businesses to take on four new rim lines, those lines being Firestone, Hayes, Kelsey and Jackson.

How the Studebaker is Helping to Stimulate the Ride-in-a-Bus Habit

The bus is riding on the crest of popularity largely because of the increased comfort provided bus riders in the modern bus of today. The views herewith show the Studebaker idea of giving better service to customers with a consequent opportunity for more profitable operation for the owners. This particular job is of 18-passenger capacity and is mounted on the 184 in. Studebaker bus chassis. It is equipped with panel type body mounted on steel disk wheels. Seats, cushions and backs are upholstered in genuine leather and due to the design of the seats each passenger has practically an individual chair. Yet but a minimum amount of space is required for the design of these seats. The body has six dome lights, three roof ventilators, together with an additional two above the windshield. A roomy luggage compartment is provided at the head of the rear row of seats and an extra luggage compartment on the top.



An increase of 120 per cent in the sale of India Tires in June, over June of 1924, has just been reported by the Uhl Rubber Co. of Visalia, Cal.

Personals

E. M. Bender, formerly chief engineer of the Lycoming Motors Corp., Williamsport, Pa., is now assistant general manager. **E. D. Herrick**, formerly assistant chief engineer has become chief engineer and **J. M. Stout**, formerly chief tool designer, is assistant chief engineer.

D. C. Briggs is now associated with the American Forging & Socket Co., Pontiac, Mich., in the capacity of general superintendent in charge of manufacturing. He was formerly production manager for the Detroit Steel Products Co.

L. D. Brown, treasurer of the B. F. Goodrich Co., has been elected vice-president and treasurer of that company. **H. Hough**, controller, has been named vice-president and controller. Both men have been connected with the Goodrich organization for a number of years.

T. V. Buckwalter has been advanced from chief engineer of the Timken Roller Bearing Co. to the capacity of vice-president in charge of engineering.

Ronald Clark has sailed for Paris, where he will resume his connection with the Cociete Anonyme Francaise North East, who are the French representatives of the North East Electric Co.

Robert E. Clingan, formerly operating head of the Bock Bearing Co., Toledo, has been elected president of that company. **W. S. Quinlan** has been made vice-president, and **C. G. Steinbicker**, secretary-treasurer.

M. W. Estabrook is now assistant sales manager of the Duplex Truck Co., Lansing, Mich. He was formerly a member of the sales department of the Flint Motor Company, Flint, Mich.

Geo. H. Hannum was guest of honor at a luncheon at the Milwaukee Athletic Club given by Frank D. Chase, Chicago architect, to introduce Mr. Hannum to a number of Milwaukee business men. Mr. Hannum has been elected president of the Hannum Manufacturing Co., of Milwaukee, which will occupy the plant of the Lavine Gear Co.

Edward S. Ingham, service manager, Budd Wheel Co., Philadelphia, recently returned from a month's inspection tour of Budd service stations in the west and in northwestern Canada. He reports brisk business in all districts visited, with indications for a most prosperous season.

John Kelsey, president of the Kelsey Wheel Co., Detroit, is in the Mayo Brothers' Hospital undergoing an operation for ulcers of the stomach. His condition is said to be serious.

F. J. Kolb has been appointed vice-president and general manager of the New England branch, the Selden Sales & Service Co. Headquarters, 1121-23 Commonwealth Ave., Boston, Mass. Mr. Kolb, in view of his eight years' association at the home office, has wide experience and a full knowledge of Selden methods and policies.

O. I. Kreusser has succeeded **F. M. Holden** as engineer in charge of the General Motor Corporation's proving ground at Milford, Mich.

Harry L. MacMillan has been advanced to the position of assistant sales manager of the King Quality Products, Inc., of Buffalo. He has extensive experience in the automotive accessory end of the industry, knowing the field thoroughly. He will make his headquarters in Los Angeles.

L. B. Massey, of the Motor Transport Company, of Minneapolis, has joined the sales force of the Diamond T Motor Car Company as district manager.

S. A. Miles, N. A. C. C. show manager, who is resting at his summer home in Christmas Cove, Me., where he will remain

until late fall, is making arrangements for an exhibit to be made by the automobile industry at the Sesqui-Centennial Exposition to be held in Philadelphia next year. He plans an individual exhibit including all manufacturers to be represented instead of exhibits by single companies.

R. A. Morrison, for many years with the American Lead Pencil Co., Hoboken, N. J., has been placed in charge of all research work for the Northwestern Chemical Co., Marietta, Ohio, manufacturer of "Norwesco."

Joseph L. Myers, general manager financial sales department, and **Glyn Davies**, manager foreign department, have been elected vice-presidents of the General Motors Acceptance Corp.

William Paul Neth has been appointed the head of a new exclusive export office established by Gramm & Kincaid Motors, Inc., of Lima, Ohio, at 44 Whitehall Street, 6 State Street, Station P, New York City. Mr. Neth, with his extensive experience, is amply qualified to handle the standardized interchangeable Gramm & Kincaid trucks in the export field.

J. W. Neun, formerly manager of the Toronto branch of the North East Electric Co., has been appointed in charge of operation of the North East Electric Co. of Canada, Ltd. This company became the manufacturer of the North East products July 1st, and will supply manufacturers of Canada using North East equipment as standard. The headquarters are at 17 Elm St., Toronto.

A. L. Scheuer has tendered his resignation as president of the Kelly-Springfield Tire Company, which upon request will be accepted not later than October 1st. His future plans are not announced.

Frank R. Schubert is the new general manager of the Strom Ball Bearing Mfg. Co., Chicago. **John Dlesk** succeeds Mr. Schubert in his former capacity as works manager.

William N. Shaw, president of the Elsemann Magneto Corp., is now on a trip to the Pacific Coast where he will thoroughly study conditions. He will call on the leading representatives and customers of the company.

G. W. Sherin has resigned as advertising manager of the American Bosch Magneto Corp. No announcement has been made as to his probable successor.

Henry G. Wells, of the Massachusetts Public Utilities Commission, has been appointed to serve on the National Association of Railroad and Utilities Commissioners formed to draft legislation that will cover the gap now left open through the recent Supreme Court decision that states may not control trucks and buses in interstate traffic because of lack of legislation.

E. V. Wills, formerly assistant service manager of the Westinghouse Automotive Division, and more recently connected with Barter-Oppenheim, Newark, N. J., has entered the service of the Elsemann Magneto Corp. He will act as service traveler in the middle western states with headquarters at the branch office in Chicago.

A New Outlet for Buses

A new role for the flexible motor bus has been found by Arnold Johnson and his Hollywood, Florida, Golf and Country Club orchestra, who are touring the country this summer in a specially designed White double-deck tally-ho bus. Johnson and his musicians left Chicago recently for an extended tour to fill concert and dance engagements in the principal cities of Illinois, Indiana, Ohio, Pennsylvania, Michigan, Kentucky and New York.

Better Delivery Facilities Will Meet Foreign Competition

"American manufacturers now have two new weapons that will help them to meet the keen European competition in getting export business from Denmark, Norway, Sweden, Belgium, Germany, and England," says F. J. Fisher, General Sales Manager of the Standard Motor Truck Company, Detroit.

"These two business-inducing weapons are the quicker delivery service and the lower freight charges that are offered to the American manufacturers who will quote the buyers prices that are based on shipping their products direct by boat from the Great Lakes ports to those overseas countries.

"Let me make a comparison of the saving in hours and dollars of shipping to those countries by boat as against shipping by rail and boat. I will take a carload of three Fisher Fast Freight motor trucks as an example. The time that is required to ship this carload of trucks from the sidetrack of our loading docks at Detroit, Michigan, to New York on direct freight is 4 days.

"When the carload of trucks arrive in New York, the export crates have to be unloaded from the car and loaded onto a lighter, which carries them out in the harbor alongside of the vessel. Then the crates are lifted by a boom and loaded onto the vessel. The time that is required for the vessel to make the trip from New York to Copenhagen, Denmark, is 22 days. The freight charges for shipping the carload of trucks from Detroit to New York are \$120, and from there to Copenhagen, Denmark, are \$285. Thus, the trip requires 26 days and costs \$405.

"Now contrast the cost in hours and dollars of shipping by this method with the experience we had this week in shipping three trucks of the same kind direct by boat from Detroit to Copenhagen. The crates were taken from our shipping dock and loaded onto a truck which delivered them to the ocean vessel at one of the Detroit piers.

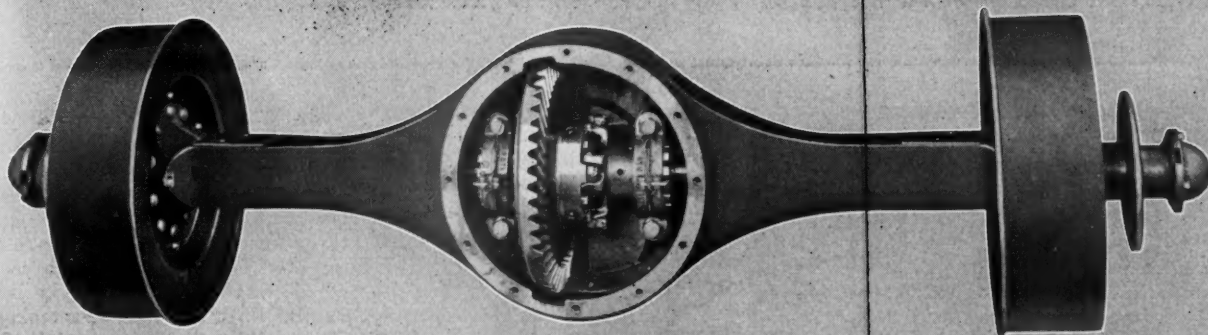
"The vessel dropped down its boom and lifted the crates onto the hatches. These crates will not be handled again until they are unloaded at the docks in Copenhagen, Denmark. This ocean vessel will make the trip direct from Detroit to that city in 21 days. The cost of shipping these trucks direct to Copenhagen by boat is \$250.

"You can quickly see what a weapon this saving of four days in delivery time and \$155 in freight charges gives our distributors when they come into competition with the European manufacturers who already have the advantages of lower material cost, lower labor cost, and lower overhead in their favor."

Borden Company Buys Thirty Electrics

Announcement was made today that the Borden Dairy Products Company had purchased 30 drop-frame C-T Electric Trucks for its Chicago retail milk operations. The Ira J. Mix Dairy Company of this city just replaced all its horses at its 30th street branch with C-T Electrics.

EATON



An Advance in Axle Design and Construction

THE new Eaton Axles for 1-ton and 1½-ton trucks are nearer the ideal of truck axle construction than any models heretofore offered.

Clean cut, well designed, with enclosed brakes, rigid housing and pinion bearing mounting. With shafts of chrome molybdenum

steel. Small rim base for tires. Simplified design making repairs quick, easy, inexpensive. Repair parts quickly obtainable at reasonable prices.

Eaton axles on your trucks make them easier to sell, easier to service, more satisfactory in every way.

THE EATON AXLE & SPRING COMPANY
CLEVELAND



AXLES

C.C.J. SHOP IDEAS

THESE two pages are primarily designed to help service station repairmen in exacting economies in time, labor and money. Salesmen, however, can also profit by scanning over these practical hints. Familiarity with expeditious and money-saving methods in truck repairs and operation will enable the salesman to talk the language of the average buyer of today,

who is more conversant with the important details of truck operation and maintenance than ever before. A money-saving idea will not only pave the way for intelligent attention on the part of the prospect, but will often result in a sale. The ideas contained herein are not confined to any particular class. Attention will be given wherever merit warrants it.

No. 21—Removable Wrecking Crane

The sketch, which was drawn from an actual photograph, shows a wrecking crane that was constructed before the manufactured products were obtainable at a reasonable price. It is constructed principally from heavy angle iron assembled into a V-end upright, welded into position, and supporting members and cross arms. A heavy bolt extends through the V-end for reinforcement and to serve as a support for the hook of a chain hoist. The vertical uprights are drilled to take two heavy pins secured so that they cannot work loose. The object of these two positions is to give two heights. The feature of the crane is that it can be quickly and easily disassembled, thereby permitting the truck to be used for other purposes should there be a need. Lockers for tools are provided on each side of the body.—J. M. Johnson, New Haven, Conn.

No. 22—Rubber Corks for Bolt Holes

Generally in cleaning carbon very little care is taken to prevent particles of carbon from falling into the cylinder bolt holes. An accumulation of these particles as a result of several cleanings eventually prevents the secure tightening of the head. As a consequence the mechanic is compelled to scrape out the accumulation at the expense of arduous work and time. This trouble can be eliminated by a little precaution. Insertions of rubber corks into each cylinder bolt hole before commencing the carbon scraping operation can be done at the cost of little inconvenience. After the job is finished, blow off all the carbon with an air hose, before removing the corks.—Chas. R. Mark, H. A. Mark Motor Co., Philipsburg, Pa.

No. 28—Small Metal Shear

All shops have need for cutting small pieces of metal of all kinds, into various shapes, for divers purposes. A small shear is an essential around any shop. One can readily be made from an old file and a piece of 1-in. square steel. Bend up one end of the steel at right angles to the length, as shown by the illustration. Drill a hole in the bent or upright end for a $\frac{1}{2}$ -in. bolt. Grind off one edge of an old file, draw the temper off the lower end,

drill a hole of the same dimension, and assemble. Although it is not essential to temper the steel block, doing so would improve the cutting ability of the shear.—Vincent Hearthside, Peoria, Ill.

No. 24—Making Cranking Easier

Easy cranking is frequently dependent upon the location of the key-way in the crank. Many trucks are difficult to crank because the crank handle is in the wrong position. This occurs when the crank handle is near the top or bottom of its orbit at the compression stroke. The ideal position for the key-way on the compression stroke will bring the crank handle on a plane horizontal to the ground. A simple way of correcting this trouble is by cutting another key-way about a $\frac{1}{2}$ -in. way from the original key-way. It is best to determine the exact distance, however. This can readily be ascertained by a little testing. The actual cutting of the new key-way is a simple operation and can be accomplished in a few minutes.—Chas. R. Mark, Philipsburg, Pa.

No. 25—To Prevent Shim Dropping

Every mechanic knows how easy it is, when taking up bearings, to drop the shims. When this occurs, especially when there are a number of shims, much time is consumed in finding and replacing them where they belong. This trouble can be avoided by bending cotter pins as illustrated. The cotter pins or shim holders should be placed on the bolts before the cap has been removed. Simply loosen the bolts sufficiently to permit the cotter pins to be shoved into place below the shims before removing the cap.—Ira Kirby, York, Pa.

Commercial Car Journal will pay \$1 for each new idea which it accepts, or as much above that amount as the idea is worth. Simply tell us exactly how it is done and send a rough pencil sketch showing clearly the method employed or the device used.

No. 27—Protecting Bolt Threads

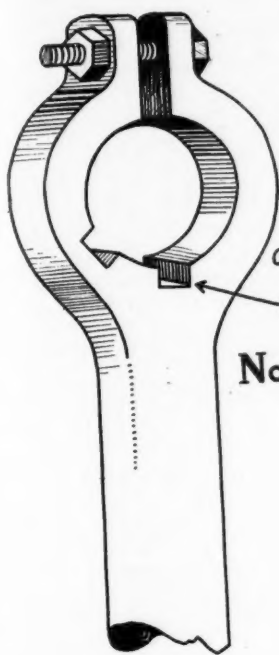
Removal of a nut from a two-end threaded bolt sometimes presents a problem. Occasionally such a stud is taken out of an engine. One end contains a screwed on nut and the other end is threaded for screwing into a certain part of the engine. A firm grip is required on the threaded end. Fastening it in a vise would ruin it. Use of lead on each jaw of the vise is suggested. The bolt can then be tightly secured with immunity and the nut removed with ease and with no damaging effects to the thread. In view of the frequent occasions demanding the use of soft metal jaws it would probably pay the mechanic to make up a pair of copper jaw covers. These can be shaped out of sheet copper in a few minutes.—Chas. R. Mark, Philipsburg, Pa.

No. 23—For Oversize Reaming

By use of shim metal an oversize hole can be reamed with a standard reamer. Place a strip of shim metal, less than one-half the degree of oversize wanted, down the full length of one cutting edge of the reamer. Placement over more than one cutting edge will result in a larger hole than desired. A little experimenting will enable the mechanic to determine how much shim metal is required if more than one cutting edge is to be covered. This is one method of reaming an oversize hole without an expansion reamer.—C. Kerflew, Lincoln, Neb.

No. 26—To Reline With Heavier Lining

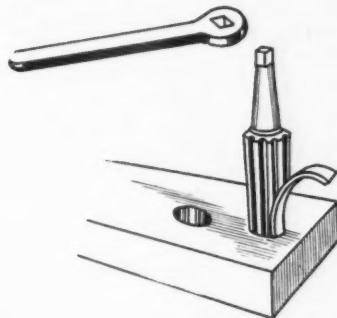
The following method is suggested for making practical the relining of brakes with a heavier or thicker lining than specifications call for. Naturally use of heavier lining will either prevent the replacement of the wheel, or make the fit entirely too tight. The brake bands, however, can be adjusted to accommodate the increased size of cutting off $\frac{1}{2}$ in. of metal on both ends of the band. This can be accomplished by means of a vise and a hack-saw. The removal of this metal will provide the added space required by the increased thickness of the band. The bands can now be relined with oversize brakes, without experiencing any difficulty in the replacement of the wheels.—Chas. R. Mark, Philipsburg, Pa.



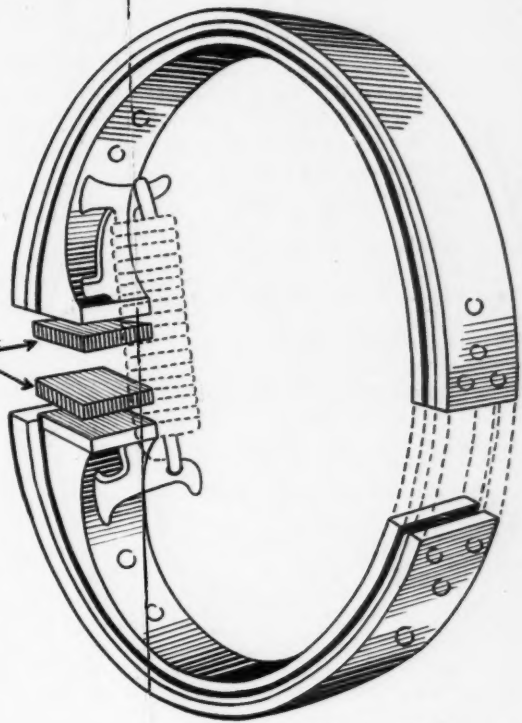
ORIGINAL KEY WAY
No. 24



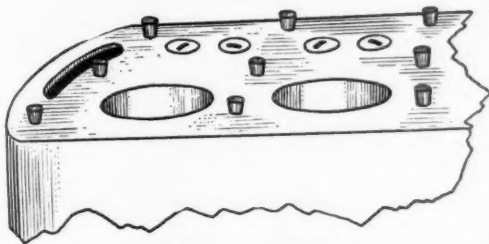
SHIMS
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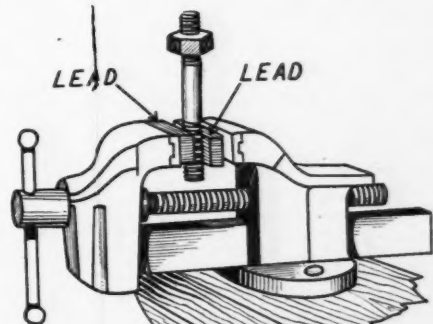
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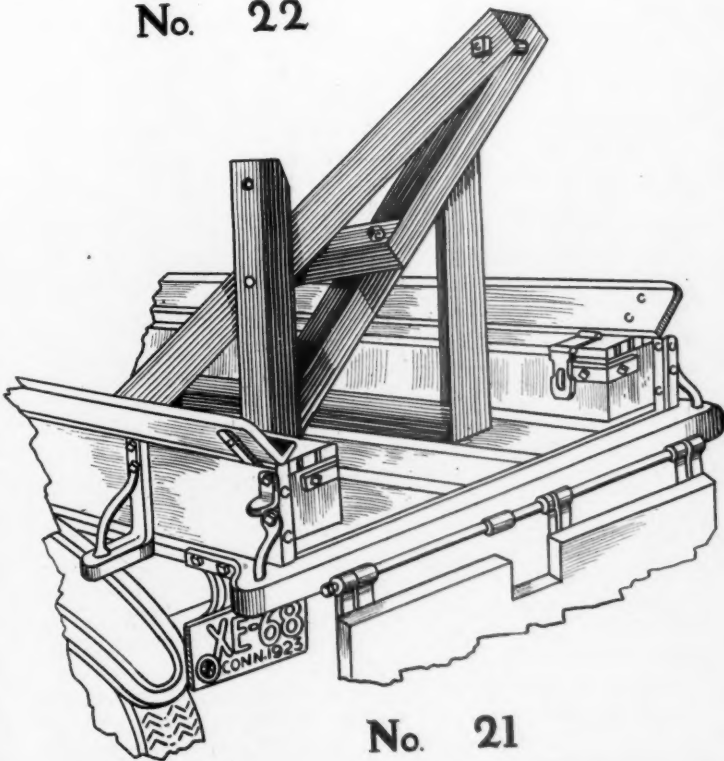
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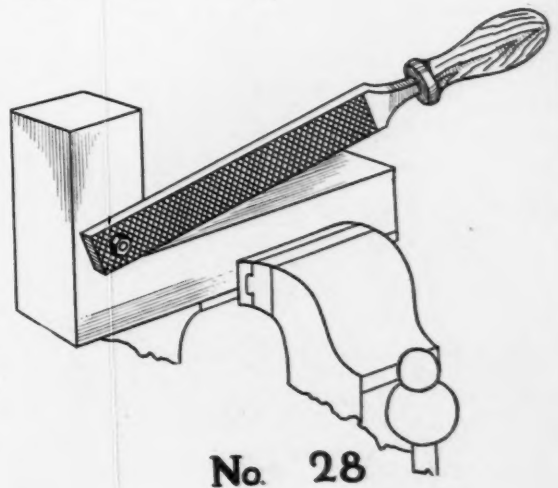
No. 22



No. 27



No. 21



No. 28

Making the Long Distance Bus Tour Popular

(Continued from page 7)

faces the trip could be made comfortably in ten days. At \$6 a day per passenger the buses show a good return, for the operating cost of these machines is, not including overheads, only 12.7 cents a mile. Depreciation is calculated at 6 cents a mile.

This summer, the same two parlor chair cars are operating on an all expense circle tours east, with weekly departures from Niagara Falls, N. Y., for Cumberland, Md. The route traversed includes the Adirondack Mountains, Green Mountains, White Mountains, Connecticut Valley, Mohawk Trail, Berkshire Hills, Hudson River, Sleepy Hollow Country, New York City, Atlantic City, Philadelphia, Washington, Gettysburg, the Blue Ridge Mountains and the Cumberland Range. The rate from Chicago, including all expenses, is \$215 and \$161 from Niagara Falls to Cumberland. To date these trips have proved very popular, and the service is now assured for years to come.

Getting the business is of course not the whole battle. Passengers secured, have to be retained as permanent customers, and even boosters. Service is therefore the keynote of the Royal Blue Line attitude toward its public. A striking example of the value of this attitude toward its customers was afforded in the recent unfair-competition case when the Royal Blue Line fought a Californian operator on the right to use the Royal Blue Line name. In the course of the hearing the statement was made by Spears that the Royal Blue Line worked to schedule even if they had only one passenger. This was contested, but the presiding judge knew that it was the truth. He said he had been in New York some time ago and had booked for a sight-seeing tour. When the day of the tour came it was cold and wet, but he went along to where the bus stood and asked the driver how many passengers had booked. Only one, the man told him, but if he turns up we shall take him round just the same as if we had a full load. So the judge had his tour with only the driver and the man who pointed out the sights as company. No one would have guessed how valuable that service was going to be to the Royal Blue Line Company two years later.

Making Money Servicing Electric Trucks

(Continued from page 18)

say, the concerns and individuals pay a fixed sum the month, based on the size or capacity of the truck. The service includes charging, washing, lubrication, storage, care and inspection of batteries and boosting if necessary. The only time boosting is supplied is during heavy snow storms in the winter. Each vehicle is thoroughly lubricated each week. Two men are employed all night, one of them starting to work at noon. One man

attends to the charging and the other does the flushing. The flushing is on a schedule and the inspection system checks the work.

A record is maintained, of course, and readings are taken every 30 minutes these being on a form shown herewith. These daily records are filed so that the history of a battery may be obtained for over a long period. Occasionally the battery inspector of the Electric Storage Battery Company, makers of the Exide, calls and checks, and if at any time a battery does not take the charge properly, or other troubles develop, the inspector is called. He in turn will take up such matters as driver over-discharging battery direct with the employer. In addition to the daily records, a Bristol Recording unit in the office keeps a check on the charging man.

Mr. Jensen said that up to the time the new service station was erected and servicing electrics was in red ink because the volume was not sufficient to cover the investment required by the equipment installed. When the new station was considered a very large concern agreed to change from gasoline to electrics and garage them at the service station. Since the new station began operations a number of concerns have added electrics and the sum total of all supplies sufficient volume so that a profit is made from the service. From this it is obvious that the electric service station must have a certain number of electrics to pay a profit and in proportion to the investment in charging equipment, building, etc.

The mechanical service on electrics is handled by the regular service depart-

ment and the same charge per hour as for gasoline trucks is made. Mr. Jensen stated, that the amount of service other than electrical required by the electric truck was very little. He quoted some figures dealing with 19 electrics, over a period of 12 months, or from June to June. Eliminating the detailed figures 15 trucks cost their owners \$860 for labor for a year or about \$57 per truck per year. The four other trucks were completely overhauled, had been in continuous service since 1910, 1911, and 1912, and cost but \$453 or an average of \$113 each. Reference was also made to 5 placed in service in 1921 and which had no labor charge other than minor adjustments such as tightening nuts and bolts.

Mr. Jensen believes that the use of electric units will increase in the cities and that they are not competitive with the gasoline truck, for each fit in their definite field. While his organization does not sell electrics, and if it did there would doubtless be a separate sales organization, the fact that nearly two-thirds of the service station is given over to electrics, that a profit is being made on the service, answers the question as to the possibilities in this field for the dealer.

Before closing mention should be made of the neatness of this service station. A mechanic spilled about half a pint of oil on the floor. An attendant at once mopped up the oil and cleaned the spot. Neatness and cleanliness are noticeable, and whenever this is the rule in a dealer's establishment the customer is assured of service.

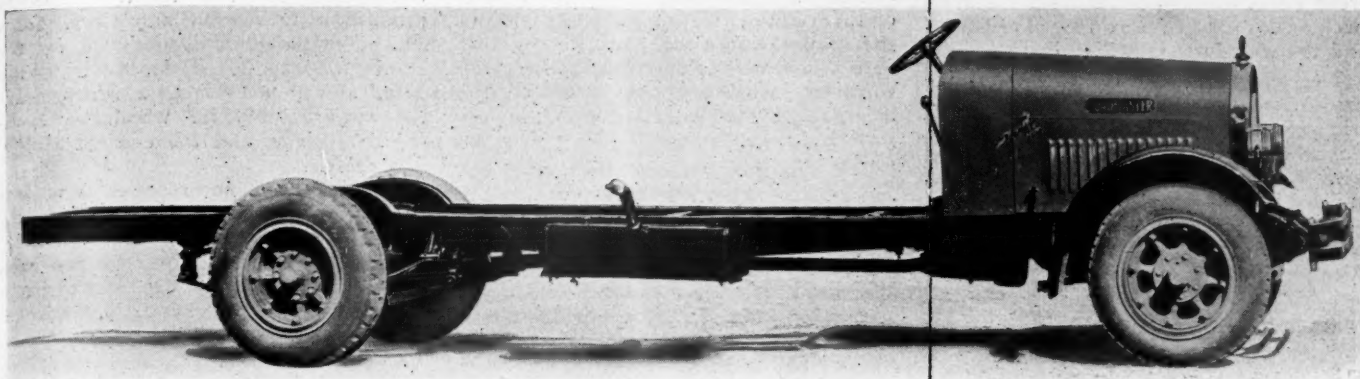
Perseverance Brings Success

FOR over fifteen years Michael J. Connolly, "Mike," as he is best known, has been at work early and stayed late at the Pierce-Arrow Sales Co., Buffalo. He was probably one of the best janitors on Main Street and anyone who has even looked inside of "Ed" Bull's well-known Pierce-Arrow salesroom could testify that everything was always orderly and polished to a nicety. Every "little thing" that "Mike" did was well done. Then, too, he had his ears and eyes open, he even read trade journals, and, he learned a lot about motor-cars and trucks in fifteen years.

One morning, not long ago, a customer came in early interested in two used trucks which had been advertised. There was no one there to talk with this very early customer so "Mike" did the talking with the result that when Mr. A. L. Sawyer, salesman, who has been with Mr. Bull in various capacities for sixteen years, came to business, "Mike" had a cash deal closed. After that "Mike" sort of filled in early mornings, and during noon-time, and after hours. He sold "used cars" until it burst right out that he has a sales "manner" which was a real natural talent. He impressed everyone with his desire to be accommodating and his downright honesty. No client ever came back and said, "you told me this or that about this machine which I find is not true." People believe in him. He talks straight, with the conviction that "knowing your job" gives one, and his natural brogue adds both color and a tone of sincerity to his priceless sales arguments.

"Mike" is now a used car salesman on both salary and commission, and following on with the same principles which made him one of the best "janitors" on Main Street he is now one of the best "used car salesmen" on Main Street. There is nothing better than steady "plugging" on the job, learning a trifle or two each day, and keeping one's head normal when success becomes that welcome, tangible, substance—dollars.

Selden Brings Out a New Roadmaster Bus Chassis



Motored With a Six-Cylinder Continental, This New Roadmaster Has a Speed Range of From 5 to 50 m. p. h.

THE new Roadmaster model just announced by the Selden Truck Corp., Rochester, N. Y., is designed for a street car type of body that will seat 21 passengers, or a Sedan type of body for inter-city type of work.

Ample power and speed for from 5 to 50 miles per hour in high gear is furnished by a big six-cylinder $3\frac{3}{4} \times 5$ Continental engine developing 72 h. p. at 2200 r. p. m. This engine is suspended from three points. Lubrication is by full pressure system. It has a removable head and its crankshaft revolves in four main bearings. Ignition is by North East battery with induction coil and distributor. Gasoline is fed to a Stromberg carburetor by a Stewart vacuum system from a 20-gal. tank mounted outside of the frame under body.

A centrifugal pump, a large fan and a cellular type nickel-plated pressed steel shell radiator is included in the cooling system.

Power is carried back to a four-speed Brown-Lipe transmission through a Brown-Lipe dry plate multiple disk clutch. All are mounted in unit with the engine.

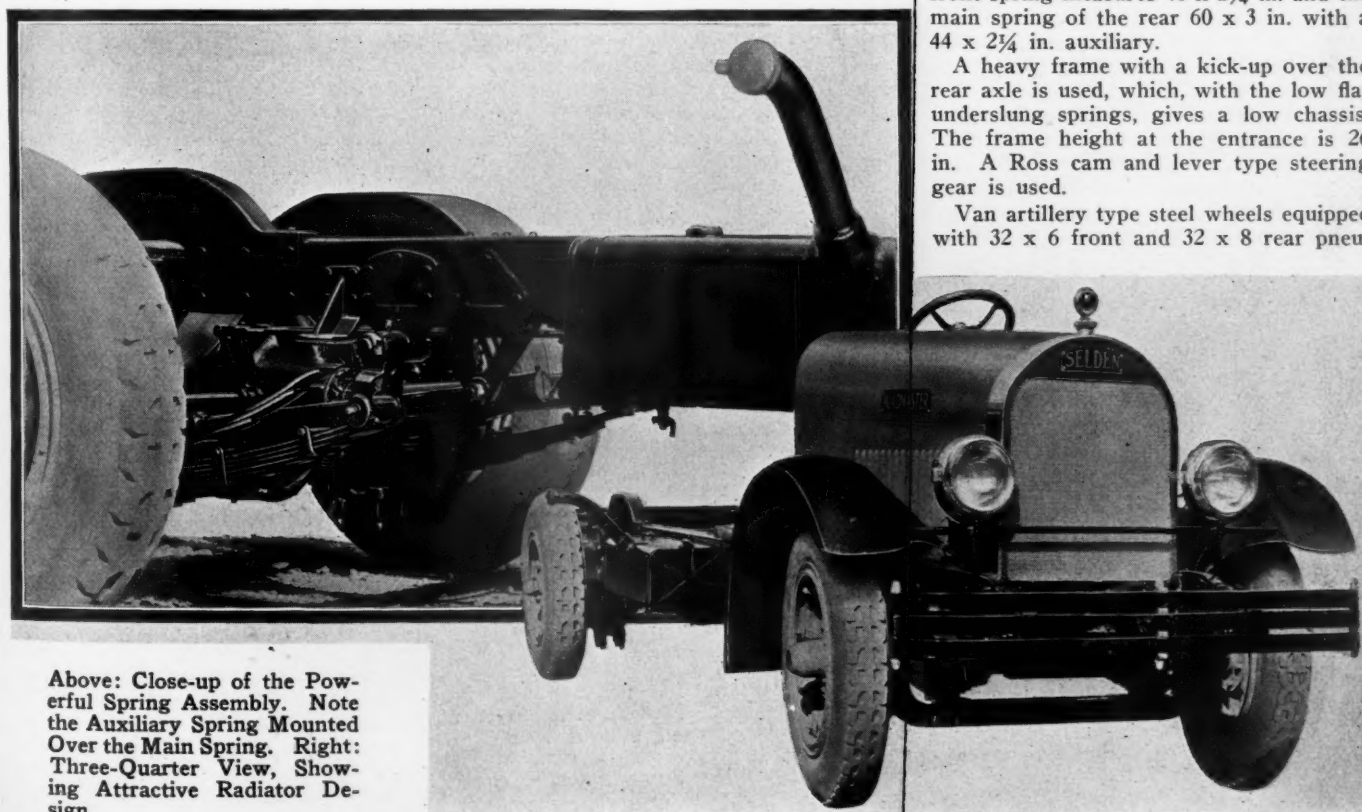
From the transmission, drive is carried by a two-piece propeller shaft, equipped with center bearing and metal universal joints to a heavy-duty Clark spiral-bevel drive rear-axle. Timken bearings are used throughout in this axle with dual Timken bearings on the outer ends of the driveshaft. Fully enclosed brakes of large capacity provide long life and good brake action. Both the service and emergency brakes are internal expanding on the rear

wheels. The brakes used are self-centering in drums eliminating adjustment and assuring full contact of shoes and drums.

The rear springs are of the three-stage type. They are stated to provide easy riding under all load conditions. The main spring is made long and flexible to provide easy riding for light loads. An auxiliary or helper spring mounted above the main spring and retained by the same clips is brought into service when the load factor is increased. As more passengers are added the front end of this spring comes into contact with a bracket on the frame, and as the load is increased the rear end of the auxiliary comes into engagement. In this manner the springs are always stiff enough to accommodate the load and at the same time have sufficient flexibility to permit of easy riding. The front spring measures $46 \times 2\frac{1}{4}$ in. and the main spring of the rear 60×3 in. with a $44 \times 2\frac{1}{4}$ in. auxiliary.

A heavy frame with a kick-up over the rear axle is used, which, with the low flat underslung springs, gives a low chassis. The frame height at the entrance is 26 in. A Ross cam and lever type steering gear is used.

Van artillery type steel wheels equipped with 32×6 front and 32×8 rear pneu-



Above: Close-up of the Powerful Spring Assembly. Note the Auxiliary Spring Mounted Over the Main Spring. Right: Three-Quarter View, Showing Attractive Radiator Design.

matics is standard equipment. Disk wheels and 32 x 6 dual pneumatic rears may be obtained at additional cost.

The wheelbase is 177 in. standard, the tread 56 in. front and rear, distance from back of dash to center of rear axle 145 in. and the chassis weight 5200 lbs.

The standard electrical equipment includes North East 12 volt, 225 watt electric generator and 12 volt starting motor, Bosch electric horn, electric head lamps with dimmers, tail-lamp, ammeter, and Willard 12 volt heavy-duty battery. Other equipment includes speedometer, motometer, mirror, front bumper, spare rim, Alemite grease gun, oil pressure gage, jack and a set of tools.

Fordson Snow-Motor Solves Transportation Over Snow

The Fordson Snow-Motor, which is now being manufactured by Snow-Motors, Inc., Detroit, Mich., is a machine that is not only quite unique in construction but one that offers a real and tangible solution to the problem of transportation over snow. Operation of the machine is not dependent upon the removal of snow on rural highways. It provides transportation over roads which are deeply covered with snow without removing any part of it.

In tests a single Snow-Motor, Fordson driven, transported heavy sled loads of logs that would have taken several spans of teams to haul, from a logging camp to a terminal, fifty miles distant, breaking the road through the snow all the way, so that teams, automobiles, and other conveyances could later follow them over the trail. The Snow-Motor, with a light passenger car for motive power, dashed over the snow, no matter what the depth, at a speed of 24 miles an hour.

The initial driving power of the Snow-Motor is the Fordson tractor. Stripped of this motive power the machine consists of two torpedo-shaped drums, to which flanges or spiral runners (sometimes called "Skates") are welded. These drums, which are chain driven, revolve in opposite directions, the spiral on one being right-handed and that on the other being left-handed. The torpedo-shaped ends of these drums and the spiral flanges engage posi-

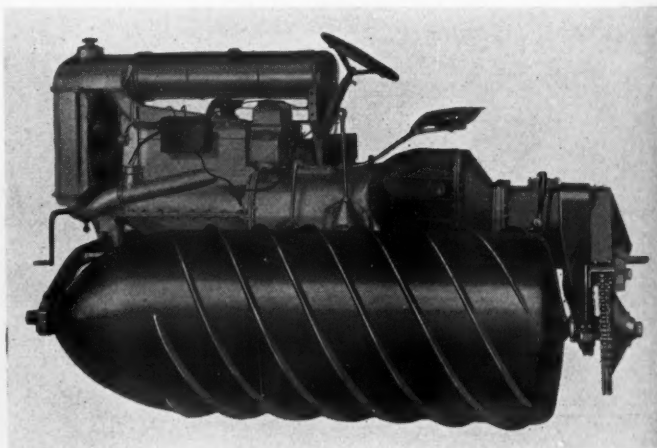
tively with the snow or ice, and, owing to the balanced thrust of one against the other, propel the Snow-Motor on a straight course, forward or reverse. Steering is effected by controlling the drive to one or the other of the drums. The action of the drums on the snow is virtually that of a worm and worm wheel, where the worm is formed by the spirals on the drum and the wheel, by that frictionless material, snow.

The important feature which saves the Snow-Motor from the fate of the wheeled vehicle, or the horse, is its action in soft snow. Where other vehicles dig themselves in, the Snow-Motor digs itself out. When the drums are running on ice the contact area is very small, as with skates. When they come to snow, they sink in, packing the snow down and, at the same time, increasing the bearing surface until it becomes sufficient to carry the weight of the machine. Further, as the weight bearing surface is increased, so also is the propelling surface of the flanges increased. The Snow-Motor is driven just the same as the Fordson would be driven if it were not mounted on the Snow-Motor, the regulator controls being used.

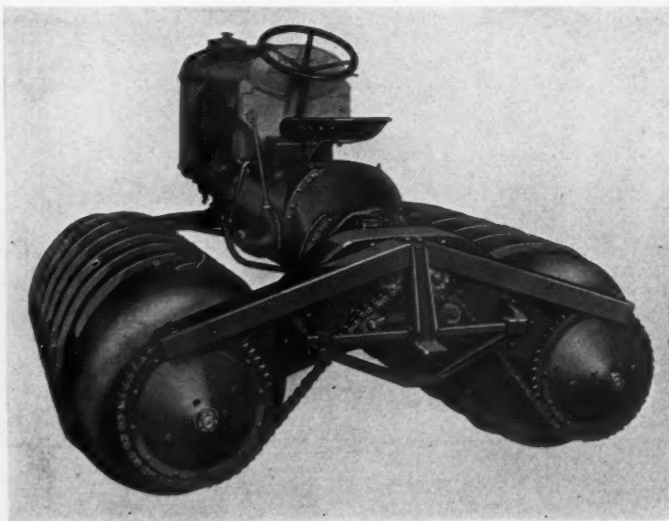
The machine has a wide track on each side, the tread being 58 in. between the centers of the drum, which are 30 in. in diameter. The whole power is behind the steering, giving it wonderful ability to maneuver. Owing to its very flexible construction it is easily managed, and it can be swung around in its own length. Any standard Fordson tractor can be used on the Snow-Motor by removing the wheels and axle, which can be replaced when the tractor is needed again for its regular summer use in agricultural or other work.

Invitations are being mailed this month to all countries of the globe inviting automobile men everywhere to attend the second World Motor Transport Congress which will be held in New York January 11-13, 1926, during the National Automobile Show.

Right: Showing Torpedo - Shaped Drums With Spiral Runners.



Left: Showing Method of Applying Fordson Power to Drums of Snow-Motor.



Martin-Parry Brings Out Safetibus for Fords

Comfort, safety and attractiveness characterize the new Safetibus now in production by Martin-Parry Corp., York, Pa. The Safetibus is designed for the Ford ton-chassis, equipped with the Martin-Parry extension, which provides the required 146 in. wheelbase, semi-elliptic springs, and the efficient Hotchkiss drive.

The Safetibus incorporates new features in light chassis bus design. By mounting the body very low on the chassis, a lower center of gravity has been maintained, assuring safety, and giving a low coach effect. There is 57 in. headroom inside from floor to roof.

It has been designed either for school purposes or for use as a general bus. The capacity is 25 children or 18 adults, not including the driver.

The interior is well lighted by two dome lights. The longitudinal seats consist of deep sprung cushions and backrests upholstered in rich textile leather. There is ample room under the seats for baggage.

Built of standardized parts, it can be completely taken down for compact crated shipment. Parts are interchangeable, permitting rapid replacement of any part on account of damage or accident. The side panels and framework are steel, giving rigid construction with minimum weight.

The semi-elliptic springs of the Martin-Parry extension insure easy riding qualities, and allow a payload capacity of over 3000 pounds. The bus is designed for use with any conventional two-speed rear axle or auxiliary transmission.

The cowl and windshield are standard Ford Sedan type, while a sun visor affords extra protection to the driver. Large windows furnish perfect vision and ventilation to the occupants, with cowl and built-in rear ventilators also provided. The windows are double strength plate glass and can be lowered into the sides of the body completely out of sight.

Asphalt paving contractors, engineers and material men, as well as public officials from all parts of the United States and Canada, will gather in Detroit, October 21, 22 and 23 for the Fourth Annual Asphalt Paving Conference under the auspices of the Asphalt Association.

Unitron for Fleet Operators

Battery charging for the fleet operator can run into a big expense item if not equipped to do his own re-charging, as a matter of fact battery charging in general has developed into a sizable business with an immense avenue of profit. Be that as it may, whether a garage rendering battery charging service or a fleet operator cutting down operating expenses.



Unitron Type No. 1

Proper battery charging facilities are essential to meet certain requirements.

For the average garage owner or fleet operator the type No. 1 Unitron recharger delivers a service that is well fitted to their demands.

Its capacity is the charging of from one to fifteen 6-volt batteries at 7 amperes or less. Its first cost which is practically the only cost is unusually low. There are no moving parts that require adjustment, replacement or lubrication. It is installed quickly and is easy to operate. It is silent with practically no vibration. The National Board of Fire Underwriters has endorsed it as being fire-proof.

This charger is ready for service upon delivery, only requiring its location and attachment to any alternating current.

A particularly desirable feature of the Unitron is said to be the fact that whether one or fifteen batteries are charged at the same time, the cost of operation does not vary to any considerable extent. Various frequencies in voltages of either 110 or 220 may be obtained at prices which The Forest Electric Co., New & Wilsey Sts., Newark, N. J. is the maker. This company also manufactures rechargers to meet any special requirement.

The Hi-Lo Horse

A convenient and time saving substitute for the antiquated wooden horse and the inadequate wood blocking formerly used in making repairs on a chassis is offered by the Garage Utilities Co., Inc., Hackensack, N. J. It is known as the Hi-Lo horse and is offered in three capacity models arranging from \$6 to \$14. Model A, for example, which is the lightest model fits the axle and frames of all passenger cars and can be instantly set at any height variable by inch adjustments from 13½ to 23½ in. Models M & B range from a minimum of 21½ to 32 in. and to 42 in., respectively.

The adjustable extension with its saddle head conveniently supports the rear axle

housing with ample clearance for the truss rod; it also supports the chassis frame with ample clearance of the spring, when removing or replacing springs or axles. Extension is provided with a positive stop preventing its withdrawal from base.

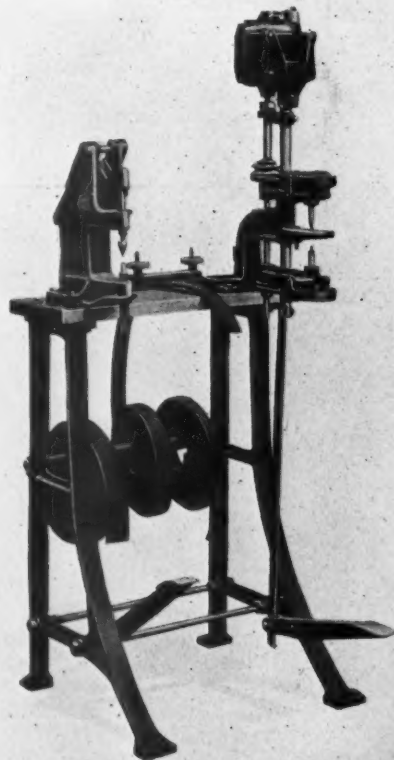
The base or pedestal is constructed of two heavy steel plates. Two steel spacers extend vertically between the plates from top to bottom. The entire base is hot riveted together, thereby forming an integral structure. The adjustable extension, which slides between the steel plates and the spacer bars is drop-forged steel with a lateral carrier-head or saddle forged integrally. The pawl is drop-forged steel with heavy shoulders lapping the top of the base plates. The adjustable extension and pawl are interchangeable in all models.

Manley Combination Reliner

The Manley combination brake relining machine brought out by the Manley Manufacturing Co., York, Pa., is a countersinking and riveting machine built in one unit. Model 825 which is illustrated lists at \$76 without motor.

This machine consists of a Manley drilling and countersinking machine and a Manley heavy duty riveting machine mounted on a bench supported by heavy iron legs, with wood top; and provided with a clamp for holding the brake lining while cutting.

A rod for holding the rolls of brake lining is also provided. The convenience of this machine can be appreciated when considering the advantage of having both machines mounted as well as a cutting arrangement for the rolls of the most popular size of brake lining in one unit.

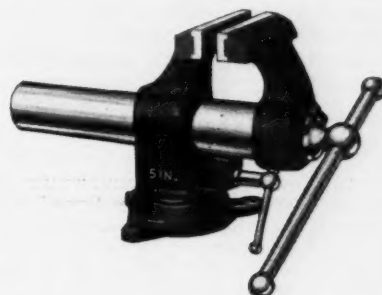


Manley Brake Relining Machine

Fulton Dropfo Bench Vise

Under the trade name of "Dropfo," a vise that is made entirely of drop forgings, excepting only the handle, is now available.

Each part is machined to be interchangeable with the same part on any other vise of the same size. The jaw plates are knurled and forged under the



Constructed Entirely of Drop Forgings

hammer and doweled onto the jaw, making it possible to replace the jaw plates.

It is lighter in weight than the cast iron type. It is made with a swivel base and wedge lock that is quick to set and automatic in tightening up. It is also made in the stationary type.

The Dropfo Vise is made in four sizes: 3-in. with jaws opening 5½ ins., 4-in. with jaws opening 6 ins., 5-in. with jaws opening 8 ins., and 5-in. heavy duty with jaws opening 8 ins.

It is manufactured by The Fulton Drop Forge, Canal Fulton, Ohio.

Nestler Tube Compound

Nestler's Tube Compound is offered by the Nestler Rubber Fusing Co., 245 W. 55th St., New York City, as a thoroughly new product in composition and in conception. When injected into an inner tube through the valve stem, holes not larger than ⅛th in in size, are sealed instantly as they occur. Similarly, porous places, slow leaks and leaks around valves are also sealed.

The compound is a liquid of the consistency of motor oil. Injection requires no other tool than an ordinary hand tire pump. The valve is removed and replaced after injection. The compound will not interfere with valve action.

The product is guaranteed not to injure tire, tube or valve, loosen patches, be affected by heat or cold nor harden in the tube.

Only a small quantity is used. It is packed in two sizes of cans, a one pint size, used for 4½ and 5 inch tires, retailing for \$1.00, and a half pint size, used for 3½ and 4 inch tires, retailing for 55 cents.

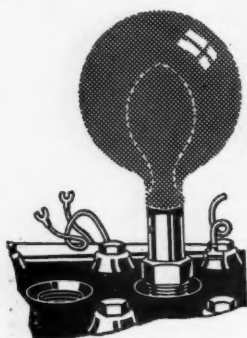
Service Trucks Must Have License

Dealers' license plates used on service truck will not get by with the State Highway Police. Officers have been active near Peoria, Ill., checking up dealers and some arrests for violations have been made. The usual dealers' license plates may not be used on their trucks and personal cars.

Goodwin-Morgan Compression Tester

A device for testing the compression in automobile cylinders has been placed upon the market by The Goodwin-Morgan Company, of Akron, Ohio. It is so simple that any owner can operate it easily and correctly.

The tester consists of a plug, similar to a spark plug, which screws into the spark plug hole. A small, specially constructed rubber balloon fits snugly on the



The Speed at Which Balloon Deflates Indicates the Rate of Leakage in Cylinder.

end of the plug. After screwing the tester into place the engine is turned over with the crank until the balloon is inflated. The speed at which the balloon deflates indicates the rate of leakage in the cylinder.

There is a metal clip which can be screwed on the tester, which holds on an ordinary tire gage. By using the gage it is possible to compare compression in each cylinder exactly, as the gage will indicate the pressure in each cylinder. It retails for \$1.50.

Royal Brake for Ford Trucks

The Improved Royal Brake for Ford trucks made by the Raybestos Co., Bridgeport, Conn., is designed to be operated by the foot pedal now controlling the transmission brake band. It can be installed without in any way altering the present truck chassis or the drilling of holes, and it operates on the outside of the drum to which the internal brake is applied at present.



Showing Arrangement of Parts and Cable Adjustment

The use of the Improved Royal Brake insures ability to lock wheels when necessary, and eliminates the unpleasant chatter of glazed, oil-soaked transmission bands.

The brakes are equipped with Raybestos brake lining $1\frac{1}{4} \times \frac{3}{16}$ in., and all parts are made of durable material, coated to prevent rust. They are neat in appear-

ance and thoroughly tested under capacity loads or those in excess of the rated figure before being placed on the market. Instructions for installation are furnished with each set of brakes so that the service station work may be accomplished as easily and quickly as possible.

Gill Economy Oil Ring

Another new Gill product recent announced is the Economy oil ring, which sells at 60 cents for all sizes.

The principle of the ring is simple. On the down-stroke of the piston the Economy oil ring gathers the excess oil from the cylinder wall into the lower collector groove, the force of the stroke driving it back through the gates and in back of the ring.

On the up-stroke of the piston, the natural suction within the motor draws this excess oil back through the bleeder holes in the piston, from where the oil flows by gravity back into the crankcase. This method of circulating the oil upholds the viscosity of the oil giving longer life to the piston assembly.

This ring is being offered by the Gill Manufacturing Co., 8300 S. Chicago Ave., Chicago, Ill.

Budd All-Steel Wheels for Fords

Meeting the demands of small truck owners, particularly Ford trucks, for all-steel wheels for greater carrying capacity and longer mileage, coupled with dependability and safety, the Budd Wheel Co., Phila., makers of all-steel wheels, announces that it is now prepared to supply all-steel duals and single wheels in Ford sizes.

In construction, the Ford size Budd dual wheel is similar to the larger types. In reality, it is two Budd all-steel wheels fastened securely together.

The former begin with $30 \times 3\frac{1}{2}$ and the latter with $29 \times 4:40$.



Budd Dual All-Steel Wheels for Ford Trucks

They are marketed in two styles, one for standard pneumatic and the other for balloon tires

Goodyear Pneumatic Cushion Tire

The Goodyear Tire & Rubber Co., Akron, Ohio, is bringing out a new pneumatic cushion tire $30 \times 3\frac{1}{2}$, for use on light vehicles, such as Fords. It is designed to give the user a product that promises low tire cost, together with the trouble-proof features of a solid, and the resiliency of a pneumatic. The tire will last for thousands of miles and will cause no delay in delivery service, as it is free



Section of the Goodyear Cushion Tire

from the usual tire trouble. It can not be punctured.

Built on a steel rim similar to that used on pneumatics, it is easy to apply. Its high and well-rounded tread makes the vehicle easy to steer and handle in traffic.

It is constructed along the lines of the patented Goodyear cushion construction which incorporates a hollow center, deep cut All-Weather tread and shock absorbent rubber stock.

New Cleveland Catalog

The Cleveland Twist Drill Co., Cleveland, Ohio, recently brought out an attractive and well arranged catalog. It is known as No. 41 and is a distinct departure in style of make-up from that formerly used. It has been the consistent style of this company to make use of wood-cut engravings for the past 20 years. The new catalog is half-tone throughout.

In addition to several new items such as special drills for Bakelite, a jobbers' carbon drill set, etc., a section of the catalog is given over to mechanical data.

Gotfredson Opens New Chicago Branch

The United Truck Company of Chicago has been named Northern Illinois distributor for the Gotfredson trucks, according to an announcement by R. B. Gotfredson, general manager of the motor truck division. This makes the fourth branch to be opened in the United States, the others being in Detroit, Cleveland, and Los Angeles. A complete sales and service staff will be maintained for Gotfredson buyers.

United Motors Offers New Model 40 Chassis

The new model 40, six-cylinder United Chassis recently brought out by the United Motors Products Company, Grand Rapids, Michigan, can be furnished in any specified wheelbase. Its low construction makes it particularly suitable for the mounting of bus bodies of passenger capacities ranging from 20 to 30, or for fast cross country hauling.

Power is furnished by a six-cylinder Wisconsin 3 $\frac{3}{8}$ x 5 bus type engine. Full Bosch electrical equipment is used on this model. Gasoline is fed to the carburetor from a gasoline tank that can be placed underneath the driving seat, or, if desired, can be hung on the side of the frame.

From the engine, power is carried through a Brown-Lipe or Fuller dry multiple disk clutch and transmission. The two-piece propeller shaft, which is constructed of special shaft stock, is equipped with metal universal joints and, in view of its length, is supported in the center by a self aligning bearing. Final drive is through double reduction bus type axle. It is full floating and is claimed to be capable of standing up at high operating speed with unusually long life. The radiator presents a very attractive appearance and is constructed in four sections of cast aluminum. All joints are neatly machined and buffed.

The frame, constructed from special stock, has a kick-up over the rear axle which permits of a very low frame suspension. It is supported on four semi-elliptic springs.

Steering is by worm and sector type of steering gear which is designed to make for easy operation. The steering tie rods are mounted behind the front axle to obviate possibility of damage by road obstructions. The road clearance at both the front and rear axle is 9 in.

Steel spoke type wheels are used equipped with 32 x 6 front and 34 x 7 rear tires. Disk wheels can be furnished for front and rear with dual pneumatic equipment at extra cost. Timken roller bearings are used throughout, as well as the Alemite system of lubrication.

Weaver Brake Service Machine

In introducing the Weaver Brake Service Machine the Weaver Manufacturing Co., Springfield, Ill., has designed a service station and shop unit to meet all brake relining requirements. It is described as a self-contained machine that will quickly and efficiently reline various types of internal and external brake bands, shoes, disk clutches and Ford transmissions.

The method of relining by pressure as used in previous Weaver equipment has been retained in this new machine. Cited as among the foremost features of application is that it permits an unobstructed view of the work at a convenient height. The turret provides ample clearance to enable handling various types of brake lining and shoes without interference.



Using a Weaver Brake Service Machine

Power is applied by operating a foot lever which is an easier method and also permits the use of both hands for holding the work. Plungers can be adjusted to regulate depth of punching and countersink to take care of any variation and thickness of plates. Uniformity of pressure in applying all rivets on a job is insured by the lever and toggle action of the foot pedal. Special tools are furnished to reline Ford transmission bands and disk clutches. They can be quickly substituted for the regular tools, using the same turret.

Simplicity of construction is another leading feature of the machine as it contributes to efficiency. The machine is not dependent on electric current and no extra electric drill is required. The total shipping weight is 175 lbs.

Yankee Triple Duty Lamp

A new combination lamp, combining in compact form a backing light, stop signal, tail lamp, and license bracket, is being manufactured by the American Auto Lamp Company of New York.

It is known as the Triple Duty Lamp and conforms to all the various state requirements. The lower portion is a standard tail lamp, below which and forming part of the frame itself, is a license plate bracket.

The upper half bears on the right a stop light and on the left a backing light. The stop light, which is available in green, red or amber, is controlled by an especially devised automatic switch. The backing light is controlled by a dash switch which may be turned on at will.

The price is \$5.50, complete with all fittings necessary for attachment.

Apparatus Developed for Reclaiming Oil

Apparatus for reclaiming crankcase oil developed by the General Electric Co., is claimed to remove the products of combustion, debris of wear, road dust and fuel dilutants from the oil, and return to the oil all its original lubricating properties.

The two major steps in the reclamation of the oil include clarification by agitation with a small amount of silicate of soda, or water glass, and other chemicals, followed by rectification in which the oil is run in a thin film over a heated surface in a current of air. The oil is first heated by contact with the outlet pipe, and is then delivered to the mixing tank where the chemicals are added. From there it goes to the settling tank or clarifier, and then to the heated rectifier where it is refined and purified. The completely reclaimed oil is then led to storage tanks.

A continuous reclaimer, with a capacity of nine gallons in 24 hours, is automatic in operation and can keep the oil for 30 engines, of five quarts capacity each, in good condition indefinitely. The apparatus can be operated without technical control. Electric heat is used.

One of the surprising characteristics of the reclaimed oil is that its stability may be even greater than that of the original oil. This is because the less stable constituents of the lubricant are broken down when the oil is first used, and are removed during the reclaiming process.

It is believed that the apparatus can be commercially developed so that the reclaimed oil can be produced at a cost low enough to make its use by fleet owners advantageous.

Kant-Krode Prevents Corrosion

A new product known as Kant-Krode, which is a sister product to Kant-Rust, was recently introduced by the Kant-Rust Products Corp., Rahway, N. J.

This product can be put to a number of good uses. For example when smeared on the battery terminals it is claimed to absolutely prevent corrosion. In addition its application is of a permanent character and does not interfere with the flow of current. Briefly, Kant-Krode can be applied to advantage, wherever corrodable metal is exposed to the action of elements.

Kant-Krode's effects on soldered joints is also worthy of mention. Unprotected solder corrodes, and to prevent this each joint should be covered as soon as it is soldered. In connection with soldering, this product may also be used as a flux. Kant-Krode is a dark colored paste packed in tubes for convenient handling. Its list price is 50 cents per tube.

With the approaching completion of the new type Brill-Westinghouse gas-electric car for the Reading Company, within a few weeks, contracts for four of the same type cars have been placed by the Pennsylvania Railroad Company and the New York, Western & Ontario Railroad.

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